

**KAUNAS UNIVERSITY OF TECHNOLOGY  
SCHOOL OF ECONOMICS AND BUSINESS**

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**INCREASING CUSTOMER SATISFACTION LEVEL WITH SERVICE  
QUALITY OF STATE BANK OF INDIA THROUGH THE  
IMPLEMENTATION OF TECHNOLOGICAL INNOVATIONS**

**MASTER'S THESIS**

**Supervisor – Prof. Doc. E. Rybakovas**

**KAUNAS, 2015**

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**International Business**

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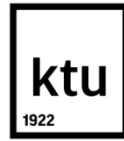
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International Business, 621N12004

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## Increasing Customer Satisfaction Level with Service Quality of State Bank of India Through The Implementation of Technological Innovations

### DECLARATION OF ACADEMIC INTEGRITY

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### **SUMMARY**

Innovation promotes an organization to change, grow & thrive in accordance with the fluctuations within business environment, whether it is internal or external. Banking sector has also no exemption to this fact and in comparison to other sectors in the economy, banking sector has witnessed major transformation due to many innovations in products, processes, services, systems, mainly due to the influence of technology. These alterations caused due to influence of information technology made revolutions and banking become ubiquitous and easily accessible service ATM services, mobile banking, internet banking are some of the examples. Indian banking system has also benefited from this advent of technology and this research attempts to find whether these technologies have influenced customer service quality and increased customer satisfaction level.

Quantitative methods were used as means of research methodology. A questionnaire was designed considering factors such as tangibility, responsiveness, responsibility, assurance and empathy focusing on bank's overall services provided. The research was conducted at SBI Branch Kottayam, Kerala. It was found that customer service quality factors has a direct influence on service delivered leading to customer satisfaction and the study concluded that technological innovations which has been implemented with above service quality factors cause increase in customer satisfaction.

**Key words: - Customer Satisfaction, Service Quality, Service Delivery, Innovations, Technology**

## INTRODUCTION

The usage of information technology has witnessed an increasing growth in the recent decade in the service industries. Berger (2003) believes that IT has most strongly influenced the banking industry where the introduction of IT has opened gates for the world towards services such as internet banking, electronic payments, security investments, information exchanges and has allowed banks to provide more diverse services to customers with less human workforce. Innovation as defined by Tufano (2002) and Lawrence (2010) is the development of new products or new production processes in order for firms to better perform their operation.

Norfie (2011) describes innovations in the banking sectors as the arrival of new or better products or services that results in lowering the cost of producing existing financial services. Akamavi (2005) believes that innovation in the banking sectors has resulted in significant changes in deregulation, increasing competition, higher cost of developing new products and the rapid pace of technological innovations, more demanding customers and consolidation of organizations. Hamilton, Nigel and Adrian (2007) are of the belief that the ability to assimilate data and to perform complex calculations with the help of IT has helped to develop financial and banking products that decreases the overall financial risk.

*Problem background and discussion:* Mabrouk and Mamoghli (2010) has explained that the innovation plays a major role in explaining banking performance however at the same time the impact of innovation on performance for the State Bank of India is often mistaken due to the two major reasons: -

1. There is very little understanding regarding what drives innovation
2. The innovations influencing banking operations and performance needs to be tested.
3. Customers expected sense of a satisfaction is not always met with the received services

For this reason is it necessary to identify whether the factors of service quality have been able to increase customer satisfaction through technological innovations within State Bank of India branch Kottayam? The main problem discussed with this thesis is how has service quality been driven by technological innovations by banks in order to satisfy its customers?

Studies by Pooja and Singh (2009), Franscesa and Claeys (2010), Batiz-Lazo and Woldesenbet (2006) and Mwanja and Muganda (2011) have shown a mix and contrasting results regarding the influence of innovations on customer satisfaction of banking performance. Pooja and Singh (2009) and Franscesa and Claeys (2010) have concluded that innovation have the least influence on banking

performance whereas Batiz-Lazo and Woldesenbet (2006) and Mwanja and Muganda (2011) have reached the conclusion that innovation has been a critical factor in influencing banking performance. It is for this very reason that a necessity arose to study the issue from an Indian context in order to establish the influence of innovations on the State Bank of India in terms of increasing customer satisfaction.

The main purpose of this study is to provide means of improving customer satisfaction through service quality by means of technology innovation.

*Objectives:*

1. To identify a relationship between customer satisfaction and IT innovations
2. To analyze the existing system followed by the State Bank of India in terms of innovation implemented.
3. To measure the customers received perception of service quality against a perfect service quality (The ideal model) offered by The State Bank of India
4. To provide solutions for increasing customer satisfaction by service delivery driven by IT innovations.

Different **research methods** for reaching the main aim are used. This research is based on collecting literature review, synthesis of various concepts and theories, analysis and primary data. Literature analysis required for this study is collated from wide variety of sources. Relevant books and literatures were consulted while the journal articles and research papers provided the much needed ground for this research. The Internet and web research were proven handy to gather new publications and references. Much of this study refers to the theory innovation, especially information technology innovation within the State Bank of India focusing on increasing customer satisfaction and thus lot of materials were drawn from the websites, research articles, interviews, etc. in order to get wider insights for this study. In order to complete the structured research a skype or face-to-face interview would be scheduled.

The structure of the entire thesis consists of 4 main parts. The *first part* consists of the background information regarding the Indian banks, their dependence upon technology and the customer satisfaction from service delivery due to innovation. The *second part* of the thesis covers the literature review and problem statement focusing concept of innovation, its influence within the service industry, factors affecting innovation and the various financial, IT related innovations existing in the Indian banks. The *third part* of the thesis is the formation of the research methodology. The *final part* of the thesis involves empirical research done at the State Bank of India. The thesis is concluded along with recommendations.



# **1. BACKGROUND INFORMATION: INDIAN BANKS, INNOVATIONS AND CUSTOMER SATISFACTION**

Majority of the banks not just Indian banks but international banks as well have focused their attention on investments in the technological aspect in order to enhance the product and service quality for customers. The investments are made in order to enhance and sustain existing infrastructure in order to promote and make available new and improvised products and services to all its customers. These advancements in technology are performed in order to manage risks in positioning and pricing of the products and services.

An attempt towards innovation has been more so in India due to India's emergence and growth in all sectors. Technology has played a key role in shaping the way things are in the banking sector and will continue to influence it in the future.

It is common knowledge that information processing, telecommunications and other related technologies come under the concept of information technology. Coobs (1987) emphasized on the fact that these very technological innovations help fuel and strengthen most economies of the world. He continues to explain that innovations in technology not only impacts the banking services but also the path of growth or continued growth of economies of various countries. Ige (1995) defines technology as the means of modern handling of information through electronic measures involving access, storage, processing, transportation or transfer. According to Alu (2002), technology affects banking and financial organizations by easing enquiry, improving service delivery and by saving time. In the past few decades the banking sector has witness an improved competitiveness, increase in variety and quality of provided service and streamlined operations due to investments in innovating technology. Yasuharu (2003) believes that the implementation of IT and communication network has revolutionized the means by which banks function. It has often been argued that the banking sector should brace itself for more drastic changes because the revolution brought about by the internet.

Majority of the customers are very satisfied with the ever increasing betterment of services provided by most banks. This change in customer satisfaction can very much be attributed to the various technological innovations adopted by the banks.

## **1.1 Dependence on Technology by Indian Banks: - Perspectives of the Indian Banking Sector**

According to a report by Ernst & Young, since 2012-13, Indian banks have gradually continued to transform their business operations by adapting and deploying solutions based on technology in order to

not only increase revenue, enhance customer experience and optimize cost structure but also increase customer satisfaction. Many banks have implemented the core banking services over the last five years. Obeying the mandate given by the Reserve Bank of India regarding core banking, majority of the banks have moved forward with large core banking transformation programs. This transformation has had a focus on automation and a significant reduction was witness in the manual processes of the various banks. Customer data has been centralized, bank teller operations streamlined and networks have been established in order to connect bank branches to a common platform. The establishment of a core banking platform has provided banks with an opportunity to escalate innovative services backed by technology such as we, mobile, call centers, ATM's, kiosks, and other systems. This implementation of technology has narrowed the technological gap that had been apparent between the private and the public sector banks.

Cash is still dominating the payment industry due to the less awareness and lack of appropriate infrastructure in all places. However, a strong endeavor has been made in the banking industry to urge customers from using cash and to shift to electronic means of payment. The proliferation of smart phones have also changed ways in which customers expect the delivery of payment services dramatically. Banks have introduced new means of payment products offering different features not only for the convenience of the customers but also for internal operational efficiency. Debit and credit cards have been in circulation for a long time however the focus of banks now is for making them and the online payment system more secure and reliable with the introduction of chips or even the latest contact-less credit cards. In order to safe guard credit card theft or online misuse, additional safety measures have been put in place by imposing limits, card profiles or a secret code send to the customers registered mobile number.

Banks are making a sincere attempt to consolidate and integrate the channel infrastructure with the help of various payment hubs in order to have a better visibility on customer payments. Innovation and adoption of the mobile and contact-less payments along with the focused risk and other measures like secured transactions have been a major focus area.

According to the research and report by Ernst & Young, banks have been trying to use different models in order to spread their investment risks in technology. Banks are looking at better utilizing their infrastructure lying idle at disaster recovery sites and ensure infrastructure does not become a hurdle during the peak transaction loads. Technology plays an essential and critical role in implementing differentiated revenue models, superior and efficient customer experience and an optimized cost structure in the new few years.

## **1.2 Forms of Technological and Financial innovation related to Banking Services in India**

The technological innovation have been highly responsible for improving the various banking services for customers. Some of the technological innovations and their delivery channels are being discussed below:-

1. Automated Teller Machines (Popularly known as ATM's): One of the most popular and revolutionary technology introduced by banks with the primary function of dispensing cash. Advancements in technology allowed customers to avail better functions such as printing mini statement, account balance and enquiries. This technology has allowed not only the customers to save time but also allows banks to improve their productivity. ATM's have proven to be a cost-efficient means which tends to yield higher productivity as they achieve higher productivity over a period of time. ATM allows banks to continue their productivity even after the office human tellers stop working. The ATM machine is seen as a technological advancement product that serves the most basic banking service to customers at their own convenient time
2. Telephone banking: - Telephone banking commonly known as telebanking is a type of banking service where a customer can get his/her transactions done or avail services over any telecommunication device. Balachander (2001) explains how customers are able to operate retain banking transaction by using telecommunication devices which are connected to an automated system of their respective banks using Automated Voice Response. Technology. Telebanking allows customers the benefits of increased convenience and time saving where banks are able to save cost of operations as delivery of telephone service is comparative cheaper than the overhead expenses of operating a branch.
3. Computer banking (Commonly known as Internet Banking): - It is a type of technological innovation which enabled customers to have access to information on their account with the help of internet. This allows customers to perform majority of the transactions such as funds transfer, bill payment, international transfer, account summary, etc. online with the click of a finger. Internet banking is able to offer customers convenience and flexibility having allowing them to have absolute control over their account and saving time and performing transaction from their home or office. Internet banking has proved to be the most cost-efficient technological innovation brought about by banks in order to yield maximum productivity. It eliminates the barriers of distance and time providing increase in productivity for the banks.

4. Mobile Banking: - One of the latest technological innovation adapted banks where customers are able to check balances on their accounts, make payments, transfer money, etc. through their mobile phones. Customers are provided with an alert on their phone whenever any major transaction takes place in their account.
5. NEFT (National Electronic Fund Transfer): -The Reserve Bank of India introduces the service of NEFT as means of a nation-wide payment system which aims to facilitate one-to-one funds transfer. With the help of this facility any individual, firm or organization can electronically transfer money from any branch to anywhere in any other branch in the country which has adopted this particular scheme. Individuals need not have a bank account in the branch and can directly deposit cash at the NEFT enabled braches and follow through the transfer. In such cases the cash remittance is restricted to a maximum of INR 50,000 or 800 euros per transaction. It has proved to be a simple, secure, safe, fast and cost effective way to transfer funds.
6. RTGS (Real Time Gross Settlement System): - This system was introduced into the Indian banking sector in the year 2004 where electronic instructions are given by banks to transfer money from their account to the account of another bank. It is a system which is maintained and operated by the Reserve Bank of India and aims to providing efficient and fast paces fund transfer. The money is transferred instantaneously into the beneficiary's account
7. Relationship Banking: - Relationship banking is the form of banking services which is built upon the customer-bank employee where the employee offers customers various financial services and making the customer aware of the various banking services.

### **1.3 Customer Satisfaction with Indian Banks due to Innovations in the service delivery**

Oliver (1980) describes customer satisfaction as an individual's feels of content or discontent that has resulted from the difference between the product or services perceived performance and the expected performance. On the other hand Tse & Wilton (1988) describe satisfaction as the customer's response to and evaluation of the outcomes received from the services to the expectations that the customer had from the services. Whereas, Anderson & Sullivan (1993) state satisfaction as a broad concept pertaining to the post purchase evaluation of the service quality to the expected pre-purchase perceptions. In order to really measure customer satisfaction it is essential to measure both expectations at the time of availing the services and the reactions after the usage of services. If present reaction equals or exceed the expected results then the customer is satisfied and if present falls short of customer expectations then the customer is dissatisfied.

The customer satisfaction is the most essential factor influencing the success of any bank. Kumar & Reinartz (2006) believe that that application of the knowledge of customer satisfaction is essential for building and holding onto a long-term relationship with customers. The banking industry has become an important industry where it is essential for them to recognize the fact that the service delivery has become a significant aspect of study for the success and survival in today's competitive banking environment. Technology has played a very critical role in transforming the way banks operate and provide service delivery to its customers.

The banking industry like any other financial industry has faced with the unprecedented challenge of market changes. A fear of economic uncertainties have hovered over the banks especially operating in India due to the implantation of new every growing technologies. According to Lovelock (2001), fierce competition, demanding customers and the changing nature of technologies and their perceptions have brought about a set of new challenges for the India banks. It is to be kept in mind, India is still at developing phase and a large number of customers are not technically inclined towards depending on machines to handle their financial transactions. Manrai & Manrai (2007) have suggested that a majority of the customer dissatisfaction is a reason for customers to switch to other banks. The reason for dissatisfaction can be attributed to the situations such as bad access, service delivery, prices, treatment, responsiveness, locations, technology, etc.

Singh and Kaur (2011) conducted a research on the Indian banks determining the factors that tend to influence the customer satisfaction through service delivery. The major findings of the research displayed that the customer satisfaction is strongly influenced by factors such as employee responsiveness, appearance of tangibles, innovations, banks competence, reliability and credibility.

State Bank of India is the largest public sector bank offering banking services in India through its more than 13,000 branches spread even to the remotest parts of India. The main reason for choosing State Bank of India as a study organization is because of its size and influence it holds because of its locations and physical presence in India. Being a public sector bank, it has offered its services to customers of all levels comprising of not only the richest and the mid-income customers but also customer who are poor but do require the services of a bank.

Taking into account the previous researches and trends this particular Master thesis aims to focus upon the customer satisfaction level with service delivery which are mainly driven by technological innovations. The next chapter of the thesis consist of the literature review primarily regarding the concept of innovation, service delivery and customer satisfaction.

Previous research has been conducted on State Bank of India in order to determine the customer satisfaction level however none of the research involved the aspect of technology. Research by Santhiyavalli (2011) has shown that there always exist a difference between what a customer's expects and what he gets. The research measures customers to be satisfied if the received service equals or is more than the expected whereas the customer is dissatisfied with his expectations are not met with the received services.

## 2. LITERATURE REVIEW: TECHNOLOGICAL INNOVATIONS AND SERVICE QUALITY FOR BANKS

### 2.1 Concept of Innovation

Innovation is not just an idea of a new creation but it also involves means to bring it out in the market. Tidd & Bessant (2009) claim that innovation is not just about offering new products and services but also offering new ways of serving established ones. Innovations could possibly involve technological advancements or management restructuring or even both. Many researchers believe that innovation can also imply upon exploitation of new technology and adapting linear thinking and out-of-the-box methodology to create new value in order to bring about changes within the society.

Innovations in the banking sector focus primarily on technology which would help improve banking experience and to offer better products and services in order to enhance its customer satisfaction level. In the current economic scenario, innovation is one of the most significant factors in influencing strategic planning. Tidd & Bessant (2009) believe that banks seeking to restore customer confidence would need to focus on products and services most relevant to customer needs and wants. Innovation provides banks with a competitive edge where it is driven by the ability to see connections to spot opportunities and to take undue advantage however what banks must do is not spend money in developing new products but instead address the most basic financial needs of customers.

Some of the earlier forms of definitions for the concept of innovation can be described in the Table 1 below: -

**Table 1: - Definition of Innovation**

Definition	Author
“Innovation is when an organization leaders to do something it did not know how to do before”	Shepard (1967)
“An innovation is an idea, practice, or material artifact perceived to be new by the relevant adoption unit”	Zaltman, Duncan and Holbex (1973)
“An internally generated or purchase device, system, policy, program, process, product or service that is new to the adopting organization”	Damanpor (1991)
“Any policy, structure, method or process, product or market opportunity that the manager of	Nohria & Gulati (1996)

the innovating unit perceived to be new”	
“A technology or practice that an organization is using for the first time, regardless of whether other organizations have previously used the technology or practice”	Klein, Conn & Sorra (2001)

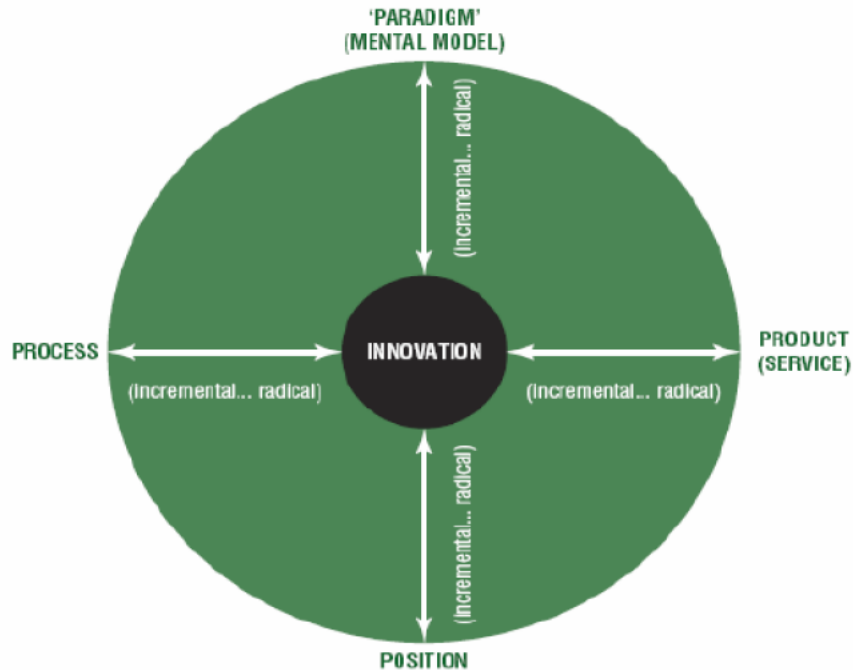
The above mentioned definitions in Table 1 portray innovation in a broader perspective. The main distinguishing factors between the definitions are the manner in which they are used. For example, one definition considers innovation as an event while the other is using innovation to describe engagement in activity to which the newness of the innovation is implied. Damanpor (1991) definition for innovation suits best for the thesis as it describes innovation in all the references, be it a product, a system, a process or a service which is really the key focus of this master thesis.

Having discussed the basic concept of innovation, I would like to focus on the aspect of service innovation as it is the basis of this master thesis. A service as described by Agwu (2008) as a product of essentially intangible benefit which tends to satisfy one’s need and it cannot be stored. A service cannot be seen, touched, smelled or possessed by someone. Schumpeter (2002) defines service innovation as a service product or service process that is based on some technology or systematic method that is carried into practice to provide benefit to its creator.

### **2.1.1 Dimension of Innovation**

This section refers to the dimensions of the innovations which play an important role in improving the banking services. The changes makes a significant contribution in order to meet customer wants and needs thereby increasing customer satisfaction. The Figure 1 below portrays the 4 dimensions of innovative space.

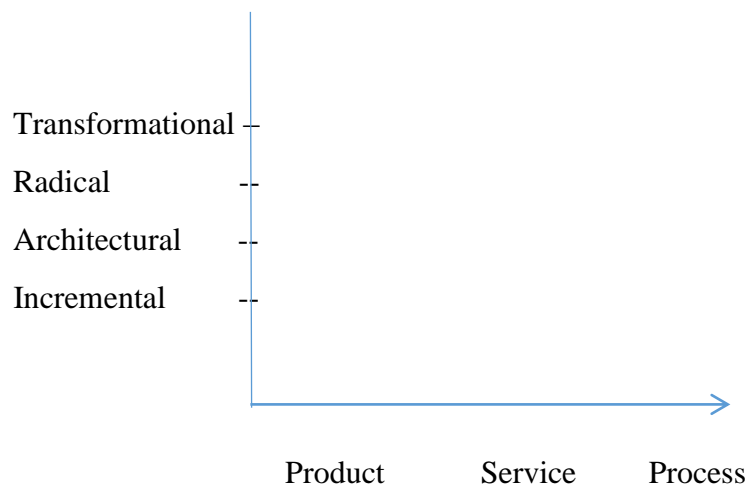




**Figure 1: - The Four Dimensions of Innovative Space (Tidd & Bessant, 2009)**

The above Figure 1 focuses on how the product, position, process and paradigm influence innovation. The figure shows how the model could be used to explore opportunities in business in order to increase customer satisfaction. The main parts of the models are: -

- Changes in products and services in order to meet the demands of customer's results in product/service innovation.
- The means by which products/services are created and catered to the users/customers is the result of process innovation.
- Products/services are introduced at different times depending on the position of the banks. Such positional changes are referred to by the position innovation.
- The paradigm focusses on the most basic fundamentals of the banks regarding what it really does and provides.



**Figure 2: - Dimensions of Innovation (Alison M, 2002)**

The above Figure 2, represents the dimensions of innovation as stated by Alison M (2002). In the Figure 2, the x-axis (horizontal) represents the impact on products and services that the Bank offers in terms of the way such products/services are created and delivered to customer. The y-axis (vertical) represents the scope of change of offering of products/services as a result of innovation. Incremental changes refer to changes that impact a new product whereas Architectural focus on novel reconfigurations of existing components of the products/services. The radical innovations changes the customer perspective by means of not only thinking but also by the way they use such products/services. The last and final transformational innovation talks about the changes in the customers.

Tidd and Bessant (2009) consider innovation as a process therefore it is advisable for banks to be aware of ways to create something new, something different that would help capture value from bringing ideas to the customers and potential customers. The products and services delivered should take into account the concerns of safety, convenience, fast and reliability to both customers and future customers. When working in a service industry especially the banking industry the three dimensions on which innovation should be focused on are the product, the process and the position. The focus on banking services and delivery would result in an increase in customer satisfaction. It is recommended for banks to focus on two major factors: Incremental and radical. The radical innovation allows banks to do or bring about something different which the users are unaware of. Along with bringing out something different banks would be able to provide customers with convenience, safety and quick access. The incremental approach of innovation would help banks to improve the means by which the deliver existing services to its customers.

Production innovation not only enables banks to bring changes in products and services but also to improve them by using the incremental and radical techniques as that would help banks not only to improvise what they are already offering but also to offer something new.

The process innovation is to change the means by which various products and services are created. For example, banks could offer free charges on withdrawals through Automatic Teller Machine (ATM's). Introduction of the internet and mobile banking has made the transactions more convenient and fast paced. All these services are reforms and techniques adopted by various banks in order to increase customer satisfaction to its customers.

The positioning innovation involves the changes on how products and services are introduced to the customers. These days most banks have started offer services targeted specially for students, elderly and retired people or other segments of the society. By doing this, banks are able to do something new as they have introduced the concept of microfinance or giving out student loans at a low interest rate.

Research by Ennew T & Waite N (311) suggests that a high level of product and service quality will lead to a higher level of customer satisfaction thus enhancing customer loyalty. Therefore, just by offering new products and services isn't going to get organizations a competitive advantage however focus on quality and increasing changes and innovation would be a key in maintaining the competitive edge. Expectations of customers are to be met by introduction of new and improved products which is primarily achieved through innovation and creativity. In this digital era, financial service providers must invest into research and development of technological breakthroughs in order to increase the customer satisfaction. The extent of technological innovations should be focused on the needs of customers in terms of what they think and offering products and services which are different from the existing ones.

Damanpour (1991) classified innovation into two dimensions: -

1. Administrative versus Technical: - Within this dimension the administrative section includes the organizational structure and the administrative processes while in the technical sector the innovations exist in products, services and production processes and technology.
2. Product vs Process: - The product innovation within this dimension includes new products or services introduced to meet a customer's needs whereas the process innovation involves newness in new element, materials, and task specifications and work flow mechanisms.

The end of this section concludes that in this thesis innovations would be seen in more of technical based product innovation since the core of this thesis is based on Information Technology. The thesis aims at services offered by banks which are a result of technological innovations. The next section would discuss the various principles of innovation existing within the service industry.

### **2.1.2 Principles of innovation in service industry**

For financial institutions like banks it is essential to reap the benefits of innovation in order to enhance their customer value, retention of customers, higher profitability, increase customer satisfaction, etc. the following principles as per Haksever (2000) are recommended to follow: -

1. To know your customers: - One of the most essential aspects of innovation in the service/financial industry is to know the customers and their needs. Before a bank or any service providing organization ventures on the path of innovation, they must at first know what the customers need and be sure that the innovative product or service will serve the needs of the customers. However in most cases of banking services, innovation doesn't necessarily require banks to know their customers rather focus on the goals of the organization.
2. To determine which need of customers will be satisfied: - It is very essential for banks to know what needs of customers a particular innovation will resolve. For example the provision of mobile and internet banking facilitate the customers with convenience and ease of access without even going to the bank. However, in the banking services it is not possible to cater to the needs and wants of all customers: therefore innovation must be focused on meeting the needs of customers at large.
3. To enhance their competitive advantage: - Innovation is one of the major factors which tends to enhance an organizations competitive advantage. Organizations before innovation should take into account their competitors in order to differentiate their services from that that of their competition by providing advantages such as: speed, user personalization, convenience, accessibility and long lasting effects in such a way that they can give value to all customers. The innovative service should be positioned in such a way that gives the banks name a unique place in the minds of the customers in comparison to its competitors.
4. To innovate the process of the service from customer's perspective: - One of the most important aspects of innovation process is that when a particular innovation is selected it is very essential for organizations to focus on the development of the process since services in itself are basically processes. Since the customers or clients of the bank are the end users of its services it is important that the innovation and its process design is formed from the perspective of the customers.

5. To design back room operations to support front room operations: - In banking services the front room refers to the main banking hall where all commercial and corporate services are conducted. Such services ensure the need of backups during the innovation process. It is to be noted that the front room where the clients are served, that is the place where all opinions and feedbacks of customers are formed. However, when in terms of innovation, everything single activity takes place in the back rooms which tends to have an adverse effect on the front room. Therefore banks need to provide services to support front room operations where customers are served.
6. To determine the extent of participation and contact of customers: - It is often a case that the involvement of customers in the delivery of products and services results in creating challenges for the organization. In the service sector, the degree of customer involvement depends on the nature of the service. When the banks want less customer involvement in the service delivery process there is the need to consider automation of the services. Also in the automation process, customers are not to spend several minutes or time before being served.

### **2.1.3 Challenges of Technology in the Banking Sector**

According to Thomas (2002) even though technology has been successful in opening new dimensions of scope and timing and creating a more convenient banking experience, yet there is a possibility for crimes to be committed very quickly. Technology not only provides benefits to banks but customers as well on the other hand it worsens the traditional banking risks. With the growing emergence of internet banking and mobile banking customers are more and more concerned about the security and privacy of such services. O'Leary et al. (1989) discusses two issues regarding banking security namely privacy and security. It is important to note who controls the access to the banks main frame computer system and its programmes, and what time to access it. Studies by Rotchanakitumnuai and Speece (2003) examined barriers such as security, privacy and trust of the World Wide Web system. Sathye (1999) reinforces the aspect of lack of privacy and security as the main obstacles to adoption of technology by the banking industry. According to Schaechter (2002), challenges on technology are inevitable therefore care must be taken on how to handle technological advancement without creating a negative effect. Breaches in security and disruptions to the systems availability can hamper the banks reputation and create a negative vibe to the existing and upcoming innovative technological initiatives.

Some of the key challenges regarding technology described by Ernst & Young in a report are: -

- Fear of technology: - A lack of trust in technology during the early stages of development could be a serious concern. Regulators are also concerned with the impact of technology based models since

they might induce new risks such as electronic data security or even outsourcing certain banking functions.

- **Lack of Awareness:** - Most of the banks especially the public sector banks fail to spread awareness regarding the various technological innovative initiatives. There are cases where some technologies or initiatives do exist but the customers are not aware of the facilities let alone the procedure to how to use them. This lack of awareness causes a huge challenge for the banking industry.
- **Lack of clear value propositions for governments and individuals:** - Many a times the government is not having the clear picture regarding the advantages of using the new technology because of the fact that government themselves adapt to such technologies late and they lack the adequate technical manpower. Decision makers in the Indian government have to contend with other issues as well. On the other hand, some unbanked customers can view the introduction and adaptation of technology in a negative manner due to lack of significant advantages to them or it might be a cause for them to lose their own business or market.
- **Lack of customer education:** - Financial service providers are sometimes slow in adequately addressing the need for customer education with regard to financial literacy and digital financial systems.
- **Lack of access:** - Certain customer groups may know about the various innovative initiatives/services and feel comfortable using them, however there might be reasons such as lack of infrastructure that might prevent them from using such facilities. For example, in region of Kumaon it would be difficult for customers to make mobile or internet transactions because of the low connectivity and lack of signals in the region.

While recognizing the complexity and the wide variety of challenges relating to the technological aspect towards innovation, banks need to strengthen their ideas and view and create confidence and trust among their customers with regard to such innovative services.

#### **2.1.4 Innovations in Service Delivery and Increasing Service Quality**

Quality in the service industry is considered to be an elusive concept because of its intangible nature of the means of offering their services and the definition of quality may vary from person to person depending from situation to situation. The Table 2 below describes the definitions of service quality defined by various authors during the many years.

**Table 2: - Definitions of Service quality**

<b>Definition</b>	<b>Author</b>
Service quality can be seen as the subjective comparison that customers make between the qualities of the services that they actually get	Gefan (2002)
Service quality is defined as the difference between customer's expectations for service performance before to the service encounter and their perceptions of the service received	Asubonteng et al (1996)
Service quality is the difference between customers' expectations of service providers performance and their evaluation of the services they receive	Parasuraman et al. (1985, 1988)

Most authors when defining service quality focus on a customer-centered definition. There is a continuous increase in customer expectations due to the improvement of quality services with the help of technological innovations. Therefore it is very important for banks to be able to meet the needs and demands of the customers. According to Wong and Sohal (2003) service quality is a factor that could increase an organization, in this case a banks, customer loyalty. Figure 1 represents the focus on functional quality attributes as being referred from the American perspective of service quality while the European perspective towards service quality considers two more additional components including functional and technical.

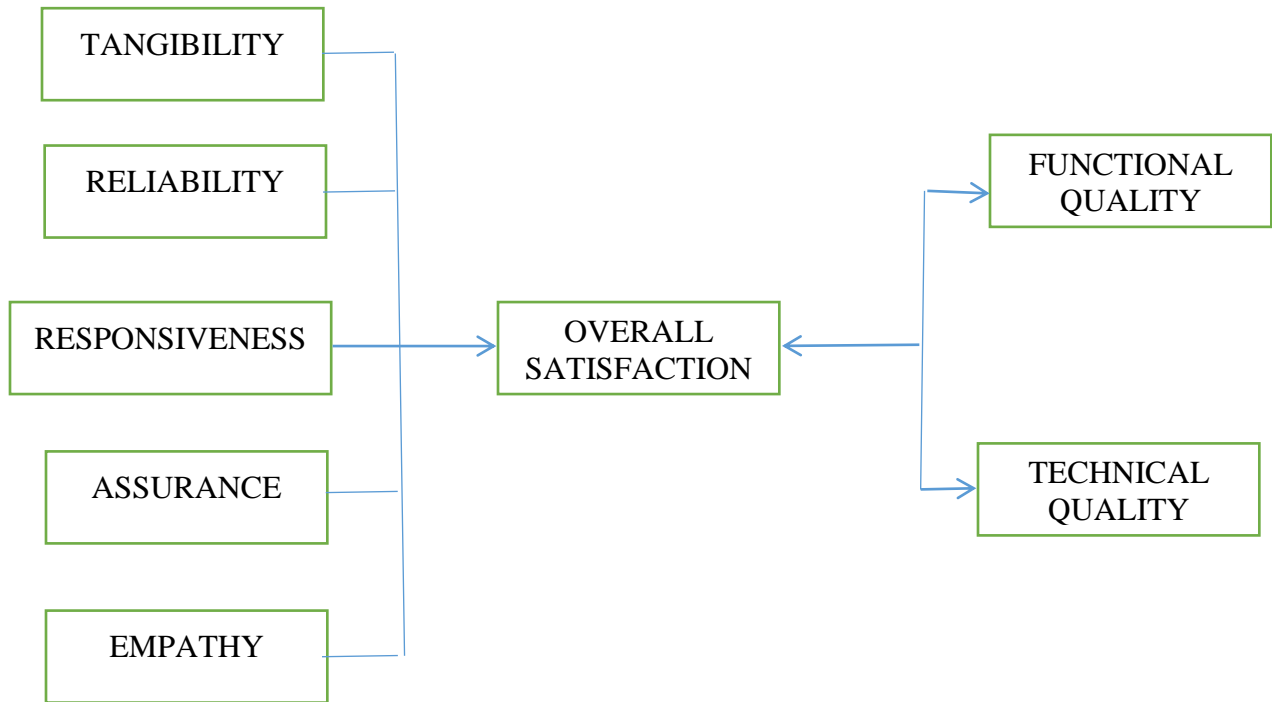


Figure 3: - Two Dimensional Aspect of Service Quality

Gronroos (1984) explained that the quality of a service in the eyes of the customers consists of 3 dimensions:

- Functional: - The process of delivering service to customers
- Technical: - The results generated by the service to the customers
- Image: - How does the customers view the company

Taking these dimensions into consideration, the measure of service quality is dependent on two variable: - The expected and the perceived service. Many researchers have provided a list of quality measuring determinants, however the best and most effective determinants have been postulated by Parasuraman (1988) and his colleague Zeithaml (1990) from US where as shown in Figure 1, the main determinants of service quality are: - Tangibility, Reliability, Responsiveness, Assurance and Empathy.



## **The 5 Dimensions of Service quality**

1. **Tangibility:** - This dimension refers to the physical attributes of the organization. It might include machines, service equipment, etc. Able and skilled employees, quality products and services, etc. may also represent tangible aspects. They are able to create concrete cues for customers to evaluate the capability of the service providing organization.
2. **Reliability:** - This particular dimension of the service quality refers to the customers trust in the organizations ability to perform the necessary services in an efficient and correct way. The customers are able to put utmost trust on the organization that they would be provided with the right information and would not be misled in any form.
3. **Responsiveness:** - Responsiveness refers to the organizations willingness to help customers and provide them with in-prompt-to services. It can often be measured by the amount of time needed to deal with customers reported problems and the response duration once the request has been filed.
4. **Assurance:** - Assurance refers to the knowledge, courtesy and expertise of the organizations employees and their ability to inspire trust and confidence among its customers.
5. **Empathy:** - This final dimension of the service quality refers to the caring and the personalized attention of the organizations employees towards its customers.

Service quality can be described as an equivalent of customers' expectations. Lundvall (2007) explains that an organization with high service quality will meet customer's needs whilst remaining economically competitive. On the other hand Metcalfe (2006) believes that the customer's perception of service quality and their satisfaction are significantly influenced by their service encounters. In the service industry the quality of a service is the factor which is responsible for integrating organization with its customers. The delivery of quality service is the measure of how an organization is able to manage its processes in order to meet the needs of its customers. According to Alison (2002) in every service organization the employees behavior and attitude as well as the organizations approach towards customers influence the delivery of service thereby making service quality an important factor leading to customer responses and future consequences of the organizations related to profitability and accountability. The

emphasis on the fact that organization providing banking services must consider quality as an essential part of the innovation process.

Quality services ensures customer retention, higher profitability, customer satisfaction, service guarantee and competitive advantage. According to Nassar (2008) quality service has been identified as a major driver of corporate markets as well as financial performance. It is now being viewed as having a potential to deliver strategic advantages such as customer retention and customer satisfaction also at the same time enhancing organizations operational efficiency and profitability.

The quality of a service has direct relationship with customer satisfaction. Organizations must pay attention to the fact that every new product or service must meet the customer's perception of the quality of service to be provided. Quality is seen to have a great impact on the level of profitability as better quality would increase customer satisfaction and loyalty thereby increasing the profitability of the organization.

Dutta K and Dutta A (2009) - investigated the perception of expectations of customers across all the banks in India. Their study showed that customers are most satisfied with the services of foreign banks followed by private and public banks.

Nirmaljeet Virk and Prabhjot Kaur Mahal (2012) - carried out a study on customer satisfaction in public and private banks of India. Private Bank managers maintain better personal relationship with customers than the public bank managers and this factor determines the customers' satisfaction to a large extent

## **2.2 Factors affecting Innovation related to Banking Services**

There are numerous factors influencing the innovative aspect of banking services having both a positive and negative impact. Before an organization or a bank introduces an innovation, it tends to gather ideas from both internal and external sources which may have an adverse effect on the quality of innovation at the bank. According to Terziovsia (2007) the majority of the internal factors are discussed below: -

1. ***Organizational size and strategy***: - The size of the organization is one of the key factor that impacts overall innovation in the organization. The level of innovation implemented within the organization has a direct relation with the size of the organization. As large firms quickly adopts technical and administrative innovations in comparison to smaller firms. The larger the organization the greater the level of innovation. As important as the size, the time of implementing the particular change also affects the organization. Firms in any sector can take advantage if it is

adapting changes in a timely manner, even if the change is small or big. As mentioned above large firms have the resources to involve in technical innovation however different firms have different intentions and strategy is another component which decides what innovation is to be implemented at the right moment. Right strategy helps a company to stay above its rivals and competition in the market. Strategy is a process of event for achieving the goals of an organization, it defines how a company can strive successfully in its field of operation. Strategic management helps a company to evaluate its present conditions and prepare its long term and short term objectives and goals. One of the most common strategy followed by companies are developing a new product or new technology or introducing innovations in their operations. These actions has great impact on productivity and service offered by the firm, this eventually leads to success in their business. Thus depending on the size of the organization the strategy adopted by it will also change also flow of work, hierarchy and communication channels in the organization affects innovation.

2. **Slack resources:** Slack resources are those resources which are excess in an organization, these includes financial or human resources available and not needed to be retained for daily operations of a firm. Accessibility of slack resources within the organization has influence on innovation, because these resources can be used for experimentation for new products or finding cost saving methods. An organization which allocates these excess resources for formal human resource and other support systems within firm promotes innovation. Resources used for trainings, remuneration, and communication improves the chance for more innovation in an organization. If slack resources are available in a firm then it can be used for undertakings that can help increase innovation.
3. **Communication:** Communication is vital in any organization, internal and external communication helps to gather key information for making innovation within the organization. Information and knowledge can be obtained from customers, suppliers through interaction by the employees. Through external communication employees can gather information not only from customers and suppliers but also from professional activities and networks. Communication held within an organization is termed as internal and it can formal and informal. Communication conducted for the development of new product, discussions made on the strategies for placement of certain product or service etc. are all factors which add to innovation within an organization. Direct and indirect communication made to customers helps to gather information on the needs and wants of them and this knowledge will assist an organization in its innovation process and provide novel solutions that will satisfy them.

4. ***People and Human Resource Management:*** Right combination of personal attributes such as knowledge, experience and skills of personnel creates innovation. If a firm can provide suitable environment which encourages its employees then the result can influence in creation of innovative ideas and solutions. Timely reward and incentives with proper knowledge and leadership helps to increase the quality of innovation in an organization.
  
5. ***Leadership and Management:*** These are two of the most important factors which have greater impact on all the activities that is done within the organization and hence it directly affects the quality of innovation. Thus it is important to know and explain the bond that exists among the several aspects of management and leadership behavior and innovation inside the organization. Quality of innovation is increased if all the teams within an organization is well supported by management and understand the passion of management for achieving their goals. The management has to build a working atmosphere where staff can add positively to innovation. An organization within the service industry who has a personnel with better skills, knowledge and experience have a better chance of improving the quality of innovation. To achieve that the firm should recruit and train people with technical skills and professional knowledge from the relevant industry. Proper and total utilization of a team's capability helps in increasing organizational performance and productivity which leads to positive results. Organization should assign different teams to cater specific needs of different group of customers and by doing so the firm can gather adequate knowledge on various needs of customers and use it for provide definite solutions or products which are innovative in market. Motivation of employees can raise the quality level of innovation within organizations in service industry, incentives and rewards are some of the tools that can be used for it. Employees efforts can be increased by motivating and this can be channeled for achieving the goals and objectives of the firm. Promotions, increase in wages and salaries and fringe benefits should be awarded to the employees by management who contributes to innovation. The above mentioned factors were internal and certain external factors also influences innovation of an organization and they are.
  
6. ***Customers and Competition:*** Customers and competitors are vital in increasing the performance of a firm. The business exists for serving the needs of its customers and competitors are those who makes an organization to improve the level of service offered by them. For firms within service industry customer satisfaction us an utmost priority. Customers who are technologically advanced expects more innovative products from the organization. They also believe that firm should make sufficient changes either on the product level or on service level to meet their expectations, hence

new products or services can only offered in a company which is innovative itself. Isolation from customers can cost an organization to lose its chance to identify the needs of the customers while competitors who are close to them can use it to deliver products and services that meets their needs. Thus information on customers and competitors helps innovations.

7. **Government regulation:** Government regulations or rules and regulations made by other authorities can help a business in its daily operations or can be barrier to their services and innovation in an organization can be affected due to this. Some of the regulatory factors are copy right laws, patent rights and intellectual property rights which can influence innovation in a firm.( Terziovsia M.2007)

### **2.3 Concept of Customer Satisfaction**

Customer satisfaction has been the subject of research for a long time and has been defined in countless number of ways. In simple terms customer satisfaction is a measure of how products or services availed by customers through an organization live up to the expectations of the customers and can also be viewed as a key performance indicator within businesses. A competitive market is where organization compete for customers and customer satisfaction is viewed as an essential differentiator. Spielman (2008) explains that the measurement of customer satisfaction provides an indication as to how successful an organization is at providing its customers with products and services. Edquist (1997) describes that the state of satisfaction is influenced by the number of both psychological and physical variables correlating with satisfaction behaviors. The most common measure of customer satisfaction involves a questionnaire with a set of statement using a Likert scale where the customers evaluates each statement in terms of their perception and expectation of performance.

Papaoannou (2006) lists a variety of factors which influence customer satisfaction. These factors are resource constraints, management perceptions of customers' expectations and the banks service quality specifications. It is to be noted that the customer satisfaction is influenced by the customer's perception of service quality depending on the size and direction of the gap between the services which customers expect to receive to what service they receive.

Furman (2002) believes that customer satisfaction is advantageous to an organization because of the fact that it creates a strong incentive and customers are unlikely to switch or change suppliers. Satisfied customers want the organization to survive at all costs, overcoming any crisis it

experiences and they try to help ensure its survival. Therefore in his belief, customer satisfaction is among the best source of insulation against corporate crisis.

According to Hall (2005) customer satisfaction is a positive fulfillment response while dissatisfaction is a negative fulfillment response. The customers experience includes the product, service, process and any other components of the customer experience.

Gronroos (1982) and Parasuraman (1985) described that customer satisfaction can be measured by taking into the account the difference between customers' expectations from services availed and the perception of the services received. For this study the expectations are seen as needs and desired of customers as they allow the researcher to know what they are expecting from the banks. According to Douglas & Connor (2003), the perceptions of customers are based on the fact what they receive in the form of services being availed to them. According to Parasuraman (1985) the evaluation of service quality requires factors such as tangibility, responsiveness, reliability, assurance and empathy. The factors require the customers to have some experience in experiencing the services offered by the banks.

#### **2.4 Relationship between Customer Satisfaction and Service quality through information technology**

Technology is not being regarded as highly effective strategic functions that aid banking operations and is the driving force for most of the service delivery techniques adapted by banks. Service operations including service delivery systems and service quality have increasingly customer centric in the last few years. According to Lewis (1994), the importance of service delivery and its influence on customer satisfaction and increasing customer loyalty cannot be more emphasized upon. Byers and Lederer (2001) explain that banks not just in India but also in other countries have implemented a service delivery technology in way to change how services were traditionally provided to its customers. This implementation has resulted in an effort to reduce cost of delivering service primarily through personnel, and the need to meet challenges imposed upon by technology driven innovative competitors.

Studies by Reichheld & Sasser (1990) and Reichheld (1996) have shown that it is more costly to acquire a new customer than retaining existing ones. Studies by Lewis (1991), showed that the service quality is the most efficient means to build a competitive advantage in an industry driven by services. Whereas Rust & Zahorik (1993) lay emphasis on the fact that profitability and larger market share is possible because of investments in service quality providing customer satisfaction. Furthermore, Buzzell

and Gale (1997) states that repeated usage and improvement in market share is possible because of high quality services provided to customers resulting in customer satisfaction.

Patel (1995) defined service innovation as a technique by which the creator can benefit and it could prove to be profitable for the organization that will follow through imitation. Tassely (1997) indicated through different kind of innovations based on the model of “Radical Innovation”. This allows organization to achieve either re-combinative innovation or formalization innovation. Re-combinative innovation is the innovation occurring when a new service is being developed by combining characteristics of two or more existing services or by splitting an existing service whereas formalization innovation happens by clarifying the relationship between technical and final characteristics.

The most common way of analyzing satisfaction is to compare the perception of a customer for an experience with their expectations. This is known as the expectations disconfirmation model of customer satisfaction. Byerlee (2002) suggests that by using this model customer satisfaction can be categorized by the level of customer expectations. According to this model if the expectations of the customers are met then they are said to be satisfied and if their expectations are not fulfilled then there is dissatisfaction among the customers. With the help of service innovation organization are able to generate a higher level of satisfaction among its customers who tend to be loyal towards the organization. This is advantageous to the organization as the customers spread a positive word-of-mouth in order to attract more customers. Byerlee (2002) believes that the more delighter customers an organization can create the more positive word-of-mouth will be communicated thereby not only bringing more customers but also lowering the cost of promotions and advertisements needed to attract new customers.

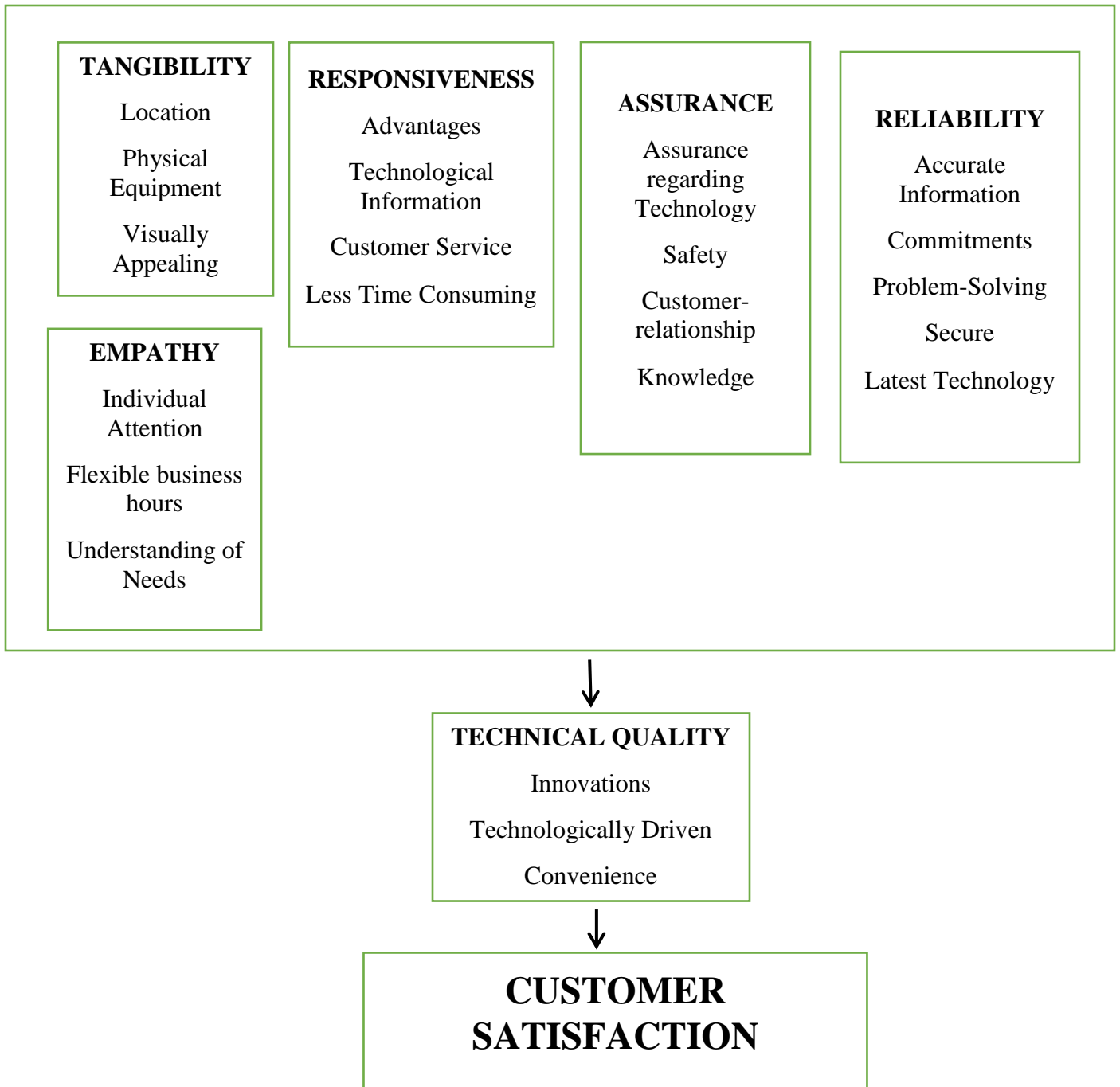


Figure 4: - Graphical Model of Service Quality Factors driven by Technical Innovation Leading to Customer Satisfaction (Author, 2015)



### **3. RESEARCH METHODOLOGY**

This section of the thesis focuses on the data collection, processing and methods of analysis. Instruments to collect data and their procedures and the target population have also been covered. Zikmund, Babin, Carr and Griffin (2010) define research methodology as an integral part which aims to explain the technical procedures in an appropriate manner for the readers. The research methodology addresses the research and sample designs used for the study. Dawson (2009) describes research methodology as the philosophy or a general principles whose main purpose is to guide a research whereas Kombo and Tromp (2009) concur with Zikmund (2010) that research methodology deals with the explanation of the procedures applied in executing a research study.

The main research questions which this master thesis aims to answer are: -

1. What factors does SBI need to focus on in order to maintain if not increase the customer satisfaction?
2. Will better quality of a service improve the rate of customer satisfaction and vice versa?
3. What is the role of IT innovations in increasing customer satisfaction among the clients of SBI?
4. What according to the customers/clients have been the major technological innovation existing at the SBI?
5. What is the level of satisfaction among customers related to the various innovative services launched by the bank during the last decade or so?

#### **3.1 Research Design for research on State Bank of India**

Dawson (2002) describes research design as a set of descriptions and justifications for the chosen methodology and research methods. Polit & Beck (2003) define research methodology as the overall plan which serves the purpose of obtaining answers to the research questions being studied. Miller & Yang (2008) and Kothari (2004) explain research methodology as an arrangement of conditions for collection and analyzing data in order to combine relevance to the purpose of the research. According to Kothari (2004) research design aims to facilitate smooth running of research objectives, thereby making research as efficient as possible and at the same time revealing maximum information with minimal expenditure of time, money and effort.

The aim of this thesis is to follow a descriptive research design. Lavraka (2008) defines it to be research method where data is collected from a representing sample of individuals using instruments based on primarily interview questions. Orodho (2003) and Kothari (2004) describe it as a design that tends to seen to portray accurately the characteristics of a particular group. Through this descriptive research the researcher is able to answer research questions related to what, why and how technological innovations are able to influence customer satisfaction and in return provide means of increasing customer satisfaction.

According to Ordhos (2003), descriptive research designs are used in preliminary and exploratory research in order to allow researchers to gather information and summarize, present and interpret data for purpose of clarification. Mugenda & Mugenda (1999) describes the purpose of descriptive research as for determine and report the way things are in order to help establish the current status targeted population under study.

### 3.2 Research Strategy

Yin (1994) laid down the most important criterion for differentiating among various research strategies. According to Yin (1994) identifying the research question was essential in order to determine the type of research strategy to be adopted. The main research strategies to be used for collecting and analyzing empirical evidence are as follows: - experiment, survey, archival analysis and case study.

**Table 3: - Relevant research questions for Research Strategies**

Strategy	Type of Research Question
Experiment	How, why
Survey	Who, what, where, how many, how much
Archival Analysis	Who, what, where, how many, how much
Case Study	How, why

From the above Table it can be noted that there is hardly any difference among the various research strategies, however the manner in which they are to be conducted is quite different. The main purpose of this master thesis measure the customer satisfaction level and the research question of this study is in the form of *what*, therefore the most appropriate strategy for this research is survey.

### **3.3 Data Collection for measuring customer satisfaction and service quality**

The study relies primarily on primary data collection techniques. The easiest and the most common way to collection information i.e. a questionnaire was used. Schwab (2005) describes a questionnaire as a measuring instrument where individuals answer to a set of questions or respond to a set of statements. Mugenda and Mugenda (2003) and Kothari (2004) further defines a questionnaire as a document consisting of several questions in printed or typed form having a definite order.

In the questionnaire the respondents would be presented with descriptive statements on a Likert scale and are required to rate their scoring to which they perceive a particular statement holds true. The questionnaire is designed in such a way that the researcher is able to cover all aspects of the respondents. Part 1 of the questionnaire includes the demographic details concerning the respondents whereas Part 2 reviews information regarding the respondent's knowledge and awareness with respect to technological innovative services provided by the State Bank of India. The Part 3 of the questionnaire reflects the satisfaction level of the customer as they would compared between the expected service quality and the customer's perceived quality measured using the service quality dimensions of tangibility, reliability, responsiveness, assurance and empathy. The final part of the questionnaire is aimed to cover the link between innovation and customer satisfaction.

### **3.4 Questionnaire Source Design for Measuring Customer Satisfaction at State Bank of India**

The questionnaire is divided into 5 functions (Tangibility, Reliability, Responsiveness, Assurance and Empathy) which are a further divided into a total of 20 statements. These statement are formed in a way to direct the research towards measuring service quality at State Bank of India. The statements are divided into two parts where the first part attempts to seek the expectations of the customers whereas the second part seeks to measure their perception. Due to limited time for the research and limited accessibility to customers, the expectations of customers were valued to be similar to that of a perfect model where everything is rated at an excellent 100% and the customer if allowed to measure would rate all the statement to the maximum of '5'.

For measuring the customer satisfaction level the mode of each and every state is calculated and compared with the expected quality of customers which is at a perfect '5'. The following scale is being used to measure the customer satisfaction level: -

- Mode and Mean value between 1 and 2: - Customers are very dissatisfied with the services of bank
- Mode and Mean value between 2 and 3: - Customers a dissatisfied with the banking services

- Mode and Mean value between 3 and 4: - Customer satisfaction level is average and the bank needs to take strong steps to improve the conditions within the set areas
- Mode and Mean value been 4 and 4.5: - Customer satisfaction level is high
- Mode and Mean value above 4.5: - Customer satisfaction level is very high as the customers are getting almost the perfect service quality that they expect.

**1. What factors does SBI need to focus on in order to maintain if not increase the customer satisfaction?**

In order to answer the above research question the questionnaire was designed to address the factors (with their indicators) such as: -

- Tangibility
  - a. Locations (Convenient location, centralized locations or at shopping centers, etc.)
  - b. Visual
  - c. Appearance
  - d. Equipment
- Reliability
  - a. Accurate Information (Not misleading the customers)
  - b. Behavior and ability of employees to crease sense of trust
  - c. Commitments
  - d. Secure
- Responsiveness
  - a. Helping
  - b. Advantages
  - c. Customer Service

- Assurance
  - a. Safe and Secure
  - b. Knowledge
  - c. Confidence
- Empathy
  - a. Individual attention
  - b. Flexible operating hours
  - c. Understanding of needs

**2. What according to the customers/clients have been the major technological innovation existing at the SBI?**

To the answer the above research question the customers are asked to respond to the innovativeness of the existing services provided by SBI. A questionnaire is prepared using scale from 1 to 3 where 1=Not innovative, 2=Innovative and 3=Very Innovative. The respondents are asked to rate the following banking services based on their innovativeness in the customers perspective: -

- Automatic Teller Machine (ATM's)
- Telephone Banking
- Internet Banking
- Branch Networking
- Real Time Gross Settlement System
- Mobile Banking

For measuring the innovativeness, the mean and mode were calculated. The closer the value of mean and mode towards '1' implied that the respondents did not see the service as an innovation, whereas value closer to '2' suggested the service was indeed innovative while mean and mode closest to '3' suggested the services were very innovative in the perspective of customers.

- 3. What is the role of IT innovations in increasing customer satisfaction among the clients of SBI?**
- 4. What is the level of satisfaction among customers related to the various innovative services launched by the bank during the last decade or so?**

The above two research question are also answered using the questionnaire where the respondents are asked to respond to the above mentioned factors and indicators. The researcher takes into consideration an ideal model as the measure of expectation of the respondents. The ideal or expected measure of customer satisfaction regarding the bank providing the innovative services with the help of technology. The idea or expectations of customers are measured to be at a perfect '5' while the respondents fill out their perceptions regarding the technological innovations leading to their satisfaction. The closer the customers perceived responses to the expected measure, the higher the customer satisfaction level towards the State Bank of India.

- 5. Which are the most common innovative services from State Bank of India being used by the customers?**

For this particular question the respondents are asked whether they use the banking services such as relationship banking, ATM's, Telephone banking, internet banking, Electronic fund transfer, real time gross settlement system, branch networking and mobile banking or not. The respondents were asked to answer the services with a 'Yes' or 'No'. The yes was coded as '1' whereas no was coded as '2'. The usage was measured by calculating the mean and mode of Yes and No. The close the mean and mode to '1' implied that the service is being used frequently by all respondents whereas the close the value to '2' the less frequently are the respondents using the services.

### **3.5 Target Population needed to conduct research on service quality as a measure of customer satisfaction**

Lavrakas (2008) defines a population as the finite or infinite collection of individual elements. Whereas Hyndman (2008) describes population as the entire collection of 'things' in which the researcher is interested. Zikumnd (2010) and Kothari (2004) explains that population refers to all the items present in any field of inquiry and could also be known as the entire 'universe'. Polit and Beck (2003) describes the population to the aggregate or the total of all those fitting to a set of certain specifications.

The target population for this particular study was at three levels. The first level of study includes the identification of a specific branch State Bank of India. Since there are more than 13000 branches of State bank of India, therefore given the amount of time for the research only 1 branch was selected. The second level of target population were the actual customers of the investigative SBI branch where the customers were briefed about the study to measure their satisfaction level and then only were they approached with the questionnaire.

In this research, there are two types of population being involved i.e. the targeted population and the accessible population. Castilo (2009) describes accessible population as the name suggests as the population in the research whom the researcher can apply their conclusions while the targeted population refers to the entire group of individuals to which the researcher is interested in generalizing the conclusions.

For the research, the questionnaire was sent to an employee at the State Bank of India. At the request of the researcher the bank manager gave permission to the employee to handout the questionnaire to the customers. Some questionnaire were emailed to customers who were frequent online users of banking services. Customers were selected based on their ages, gender, occupation and frequent users of online banking services.

### **3.6 Sampling Frame and Sample obtained for research on service quality and customer satisfaction**

Lavrakas (2008) describes a sampling frame as list of target population from which the sample is selected whereas Gill and Johnson (2002) define sampling frame as a list of members of the research population from which a random sample may be drawn. Mugenda and Mugenda (2003) and Kothari (2004) further describes sampling frame as the list that comprises of all the elements in the universe.

Lavrakas (2008) describes the sample as a subset of elements which are drawn from a larger population. Kombo and Tromp (2009) and Kothari (2004) describe sample as a collection of units representing the universe they are chosen from. Grestman (2003) signifies the need of sample because of the studies insufficient precision, lack of power to reject a false hypothesis and a waste of time and money. Therefore, it is very important that before collecting data the sample size is calculated.

Polit and Beck (2003) strongly recommend that it is wise to collect data from a small segment than from the entire population else the study would be not only time consuming but also expensive. The drawback of selecting a sample is that it might not reflect the entire population's behavior, traits, symptoms or beliefs.

Due to the shortage of time only one branch of SBI was selected to conduct the research. Since the banking functions vary only to a slight degree therefore it could be said that the one branch of SBI could represent the entire State Bank of India. A sincere attempt is being made to contact with the branch manager of the particular SBI branch, however as a backup certain key or top level bank officials are also being contacted. The questionnaire aimed to measure customer satisfaction level and the innovative aspect of the banking services is being sent an employee of the SBI branch who after seeking due permission from the bank manager would forward it to customers who are willing to give us a feedback. Considering the language barrier, time consumption, individual attitude and behavior, etc. the estimated sample for this research is about 125 respondents. The bank was able to send out the questionnaire to 125 customers in 3 days' time out of which only 54 responded within 4-5 days. Since the customers were not accessible to the researcher therefore the sample selection was left to the Kottayam branch of State Bank of India. The respondents we were seeking and for what purpose was clearly mentioned to the branch manager and other employees. The main purpose of the questionnaire was to measure the customer satisfaction of customers at the Kottayam State Bank of India due to service quality driven by technology.



## **4. EMPIRICAL ANALYSIS OF MEASURE OF CUSTOMER SATISFACTION DUE TO SERVICE QUALITY DRIVEN BY IT BASED INNOVATIONS**

### **4.1 State Bank of India**

State Bank of India is India's largest public sector bank with over 13,000 branches all over the country. The establishment of State Bank of India goes back to the nineteenth century to the year 1806. It was a unique institution during that time because it was established a joint stock bank of British India and sponsored by the Government of Bengal. It is the biggest commercial bank regarding the number of deposits, assets, profits, offices and branches, customers and employees. 58.60% of its shares are owned by the Government of India making it one of the well-established financial institution in India. State Bank of India and its five associate banks forms the SBI Group which has a history of 200 years and it is one among the Fortune 500 Company. The SBI Group has 22% share of Indian banking market, with 191 offices in various countries. It also had assets amounting to USD 432.02 billion, deposits totaling USD 328.47 and capital and reserves worth USD 25.82 billion.

During the last decade or so, State Bank of India, the largest public sector bank in India, has offered its customers the following innovative services: -

1. **SMS Unhappy:** - According to the Managing Director of SBI, Mr. Siva Kumar, and this innovative initiative was launched as a customer platform where customers/clients are able to lodge complaints via SMS. Any customer who is unhappy with any of the services and wishes to lodge a complaint just needs to message "unhappy" to a specified number. The Happy room then calls the customers and records the details of the complaint and the complaint is then forwarded to the particular branch where the problem arose. SBI have received hundreds and thousands of such complaint and with this SBI has been able to tackle a lot of issues and have this service a great success. Other banks have also started to imitate this service.
2. **Crorepati Only Branch:** - Crorepati, in Hindi means a millionaire. This initiative was the first of its kind where for an individual to open a bank account needs a minimum of INR 1 Crore (1 million INR=1, 25,000 Euros). Customers not only need the minimum amount of money but also needs an invitation from the bank. The branch specializes in services such as relationship managers, 24/7 lockers, extended banking hours, door-step pick up and drop facilities. The bank also provided special dressing rooms for customers to cater to their needs of late night function goers segment.

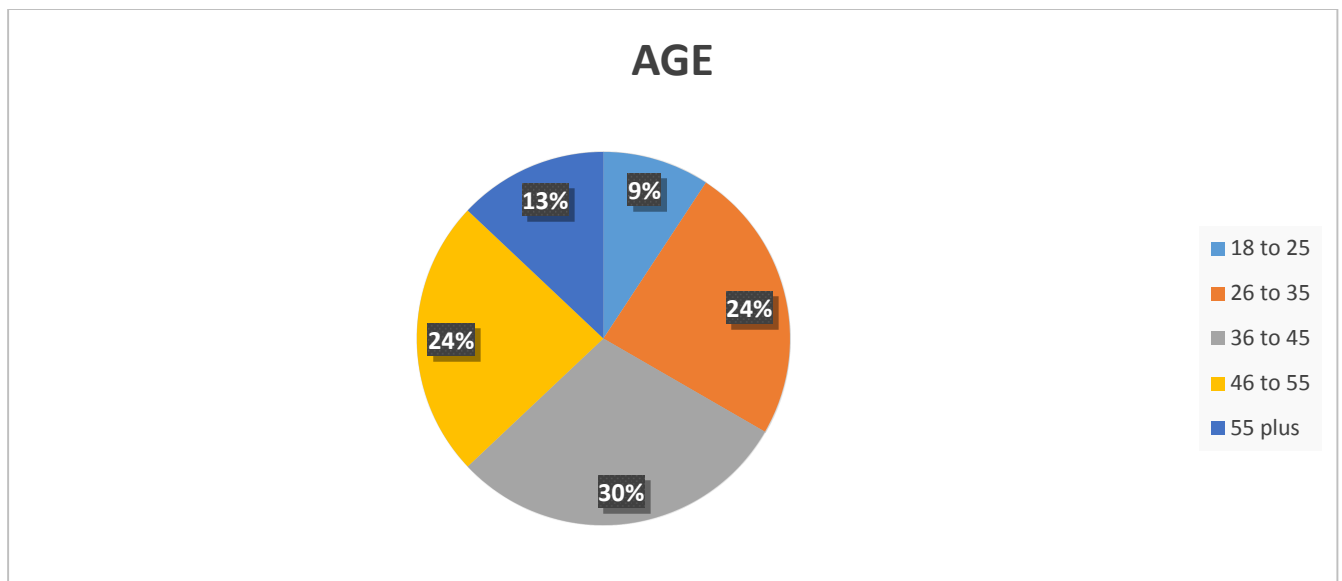
3. One Rupee Bank: - In contrast to the Crorepati initiative, this initiative allows customers to open an account with just one rupee through the bank kiosks<sup>5</sup>. It is an initiative aimed to provide banking services to the under-banked sections of the society especially the rural areas.
4. Others: - Apart from the above mentioned services, SBI also offers initiatives such online education, online home, online Demat, online car loans, E-invest, cyber plus, etc.

Product Innovation	One-Rupee Bank
Process Innovation	SMS Unhappy
Position Innovation	Expand abroad
Paradigm Innovation	Mobile Banking

The above table shows the various initiatives introduced by the State Bank of India and what aspect of innovation they account for. The initiative of the One-Rupee Bank is product innovation which aims to cater customers' needs especially from the rural areas. The SMS Unhappy is a process innovation where the SBI changes or make adjustments to one of their processes whereby a customer can make complaints through a simple message without having to wait at banks for a longer duration. The expansion abroad with 'Yatra Card' has helped SBI to reach international whereby providing its customers with international facilities at much lower rates and easy international money transfer. This has shifted the Banks position innovation as it started tapping the international customers especially so many Indian living abroad. A perfect example of a paradigm innovation is the introduction of the mobile app where customers can make transactions with the touch of a finger.

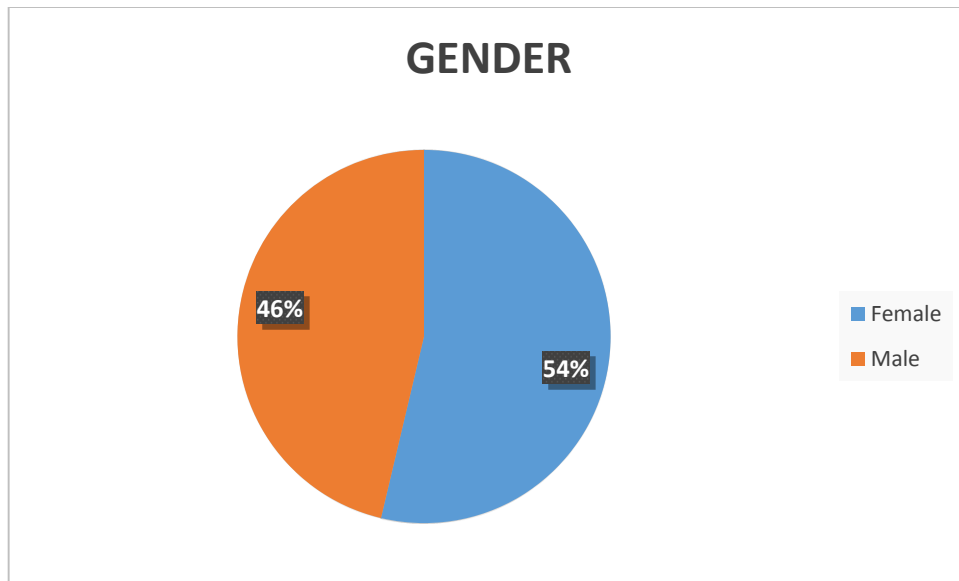
#### **4.2 Respondents Profile**

This section of the Master thesis involves the respondents profile covering the age, gender, occupation and monthly income of the respondents.



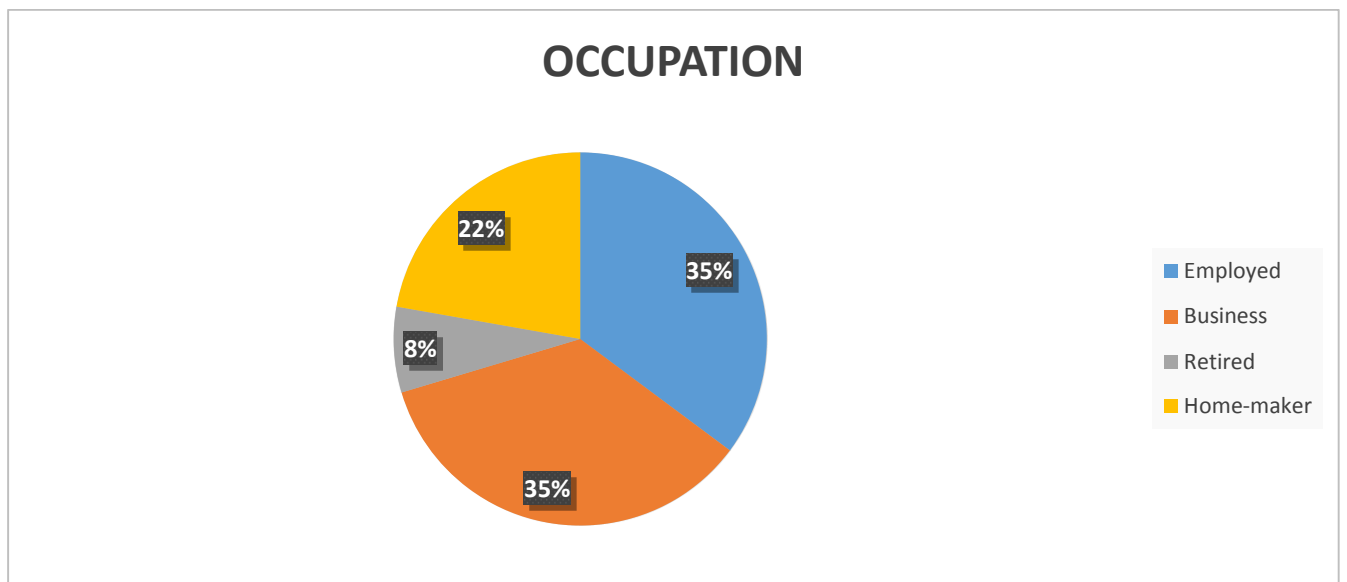
**Figure 5: - Respondents age group**

The respondents are of wide range of age ranging from 18 to 25. The maximum number of respondents are of the age between 36-45 accounting for 30% of the respondents where 24% and 24% accounts for the respondents of ages 26 to 35 and 46 to 55. Ages 55+ respondents account for about 13% whereas respondents of age 18 to 25 account for a mere 9%. This analysis is important because the age factor is major indicator in analyzing the technological innovations provided by the State Bank of India. It is a mixed opinion that even though older people prefer to use to technology as means of convenience however, they might not be comfortable using the various innovative services. The usage of technology is mainly done by young users whereas older generation tend to be more comfortable with traditional means of performing banking functions.



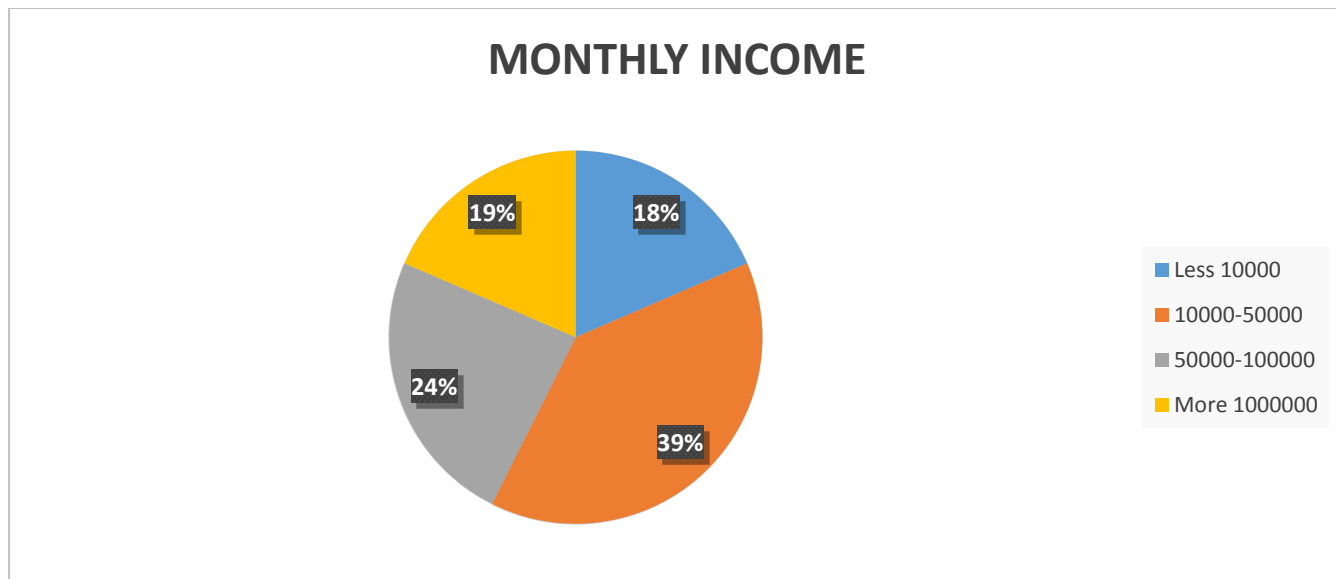
**Figure 6: - Respondents Gender**

The above shown Figure 6 consists of representation of the Gender of respondents. The Gender is taken into consideration because of the popular belief that men tend to be more dependent upon technology than women, therefore as a researcher it is necessary to understand the female perspective of the technological innovations brought about by the State Bank of India. From the Figure 6 it can be noted that 54% of the respondents consists of females where 46% of the respondents are males. This helps us to understand the influence of Technological innovations upon customer satisfaction brought about by the services provided by the State Bank of India.



**Figure 7: - Respondents Occupation**

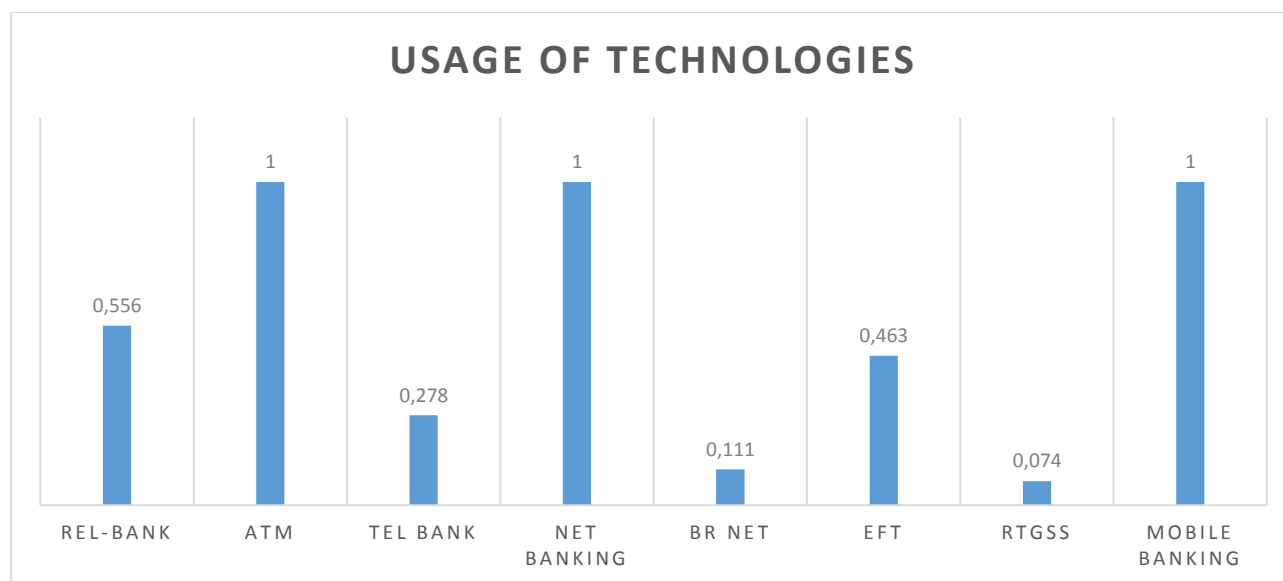
It can be seen in the above Figure the representation of the respondent's occupation. This profile of respondents is necessary because it helps to track the users of various banking services and their perspectives. There might be some services that would be useful for the Businessmen whereas there would be some innovative services designed for home-makers, thereby this profile helps in identifying future opportunities where services could be designed to cater to a certain section of people. From the above Figure it can be seen that 70% of the respondents include the businessmen and the employees i.e. there is equal representation. Whereas, 22% of the respondents are home-makers and 8% are retired.



**Figure 8: - Respondents Monthly Income**

The respondent's monthly income is necessary for the research analysis because the more transactions an individual would be dealing in, the more he would be using the innovative services and thus the researcher would be able to comprehend the respondent's satisfaction level towards the services provided by the State Bank of India. Gone are the days when the users needed to withdraw a large amount of money in cash or even have to wait in line at the bank to make payments. Respondents of all income levels are able to make big or small transactions easily with the help of technology. However, the level of usage and the type of innovative services could be different for different types of income levels of respondents. We can see from the above Figure that 39% of the respondents are receiving an income between Rs 10000-50000 whereas 24% accounts for income between Rs 50000-100000. Surprisingly a large 19% of the respondents have income over Rs 100000.

### 4.3 Quantitative Analysis of factors of satisfaction for customers of State Bank of India

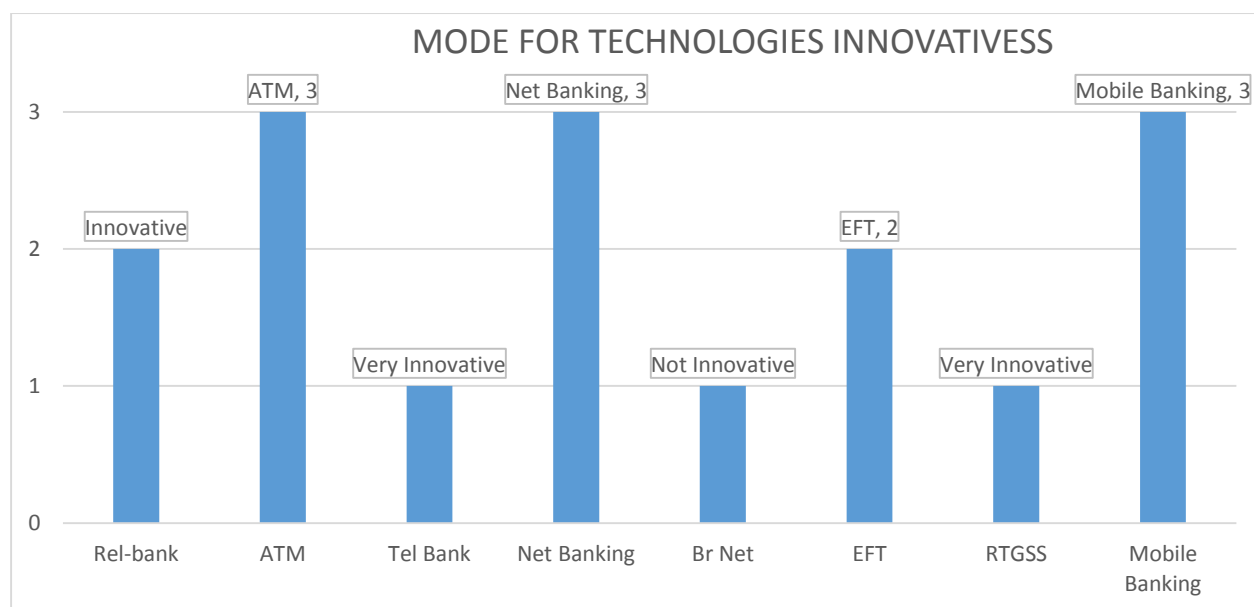


**Figure 9: - Respondents response towards usage of various Technological Services**

The above shown Figure 9 represents the respondents' tendency to use the various services based on technology. The above columns in the graph represents the customer's usage percentage for the particular mentioned services. From the above shown diagram it can be seen that most of the respondents do not use services such as Real Time Gross Settlement System (RTGSS), branch networking and telephone banking. There are still some respondents who make operations through Electronic Fund Transfer. However, the most commonly used technological innovation provided by State Bank of India are the use of ATM's, Mobile banking and Internet banking. From the above analysis the following details could be noted: -

Services	Usage
Relationship Banking	55.6%
Automatic Teller Machines (ATM)	100%
Telephone Banking	27.8%
Internet Banking	100%
Branch Networking	11.1%
Electronic Fund Transfer	46.3%
Real Time Gross Settlement System	7.4%
Mobile Banking	100%

The above table represents the customer's usage of the services offered by the State Bank of India. It can be clearly concluded the most popular services in terms of innovation and usage are the ATM's, mobile banking and internet banking where 100% of the respondents use the services. The services which are out dated or not so commonly used by the respondents are the RTGSS which is used by only 7.4% of the respondents whereas branch networking is used by 11.1%. Surprisingly electronic fund transfer and telephone banking are still common with the usage of internet banking and mobile banking with 46.3% and 27.8% of the respondents still using those services. Relationship banking is still accessed and availed by 55.6% of the respondents.



**Figure 10: - Respondents perception of Innovativeness of the Banking Services**

The above figure represents the innovativeness of the various technological innovative services brought about by the State Bank of India. The respondents were asked to measure the innovate side of the services in their eyes. Based on the analysis it can be seen that Mobile banking, net banking and ATM's have been voted to be the most innovative of the services. Electronic fund transfer and relationship banking have been voted as not such major innovations but still they are new to some whereas Telephone banking and Real Time Gross Settlement System are considered to be not innovative at all.

Services	Not Innovative	Innovative	Very Innovative
Relationship Banking	33.3%	51.9%	14.8%
Automatic Teller Machines (ATM)	-	33.3%	66.7%
Telephone Banking	68.5%	31.5%	-

Internet Banking	-	14.8%	85.2%
Branch Networking	81.4%	18.6%	-
Electronic Fund Transfer	42.5%	53.7%	3.8%
Real Time Gross Settlement System	92.5%	7.5%	-
Mobile Banking	-	-	100%

The above table represents the respondents' perspective regarding the innovative of the services provided by State Bank of India. It can be seen that 100% of the respondents suggested that mobile banking service is very innovative while 85.2% of the respondents believe the same for internet banking and 66.7% for ATM's. The RTGSS might be convenient as system to transfer large amount of money however, the 92.5% of the respondents believe that it is not innovative and instead they could prefer to transfer money via internet. Another reason could be seen is that RTGSS is beneficial for large transactions and therefore respondents with less monthly income really do not need such a service. Services such as branch networking and telephone banking have also been scored low on being innovative with 81.4% and 68.5% of the respondents suggesting it to be not innovative especially with rise and comfort of internet and mobile banking.

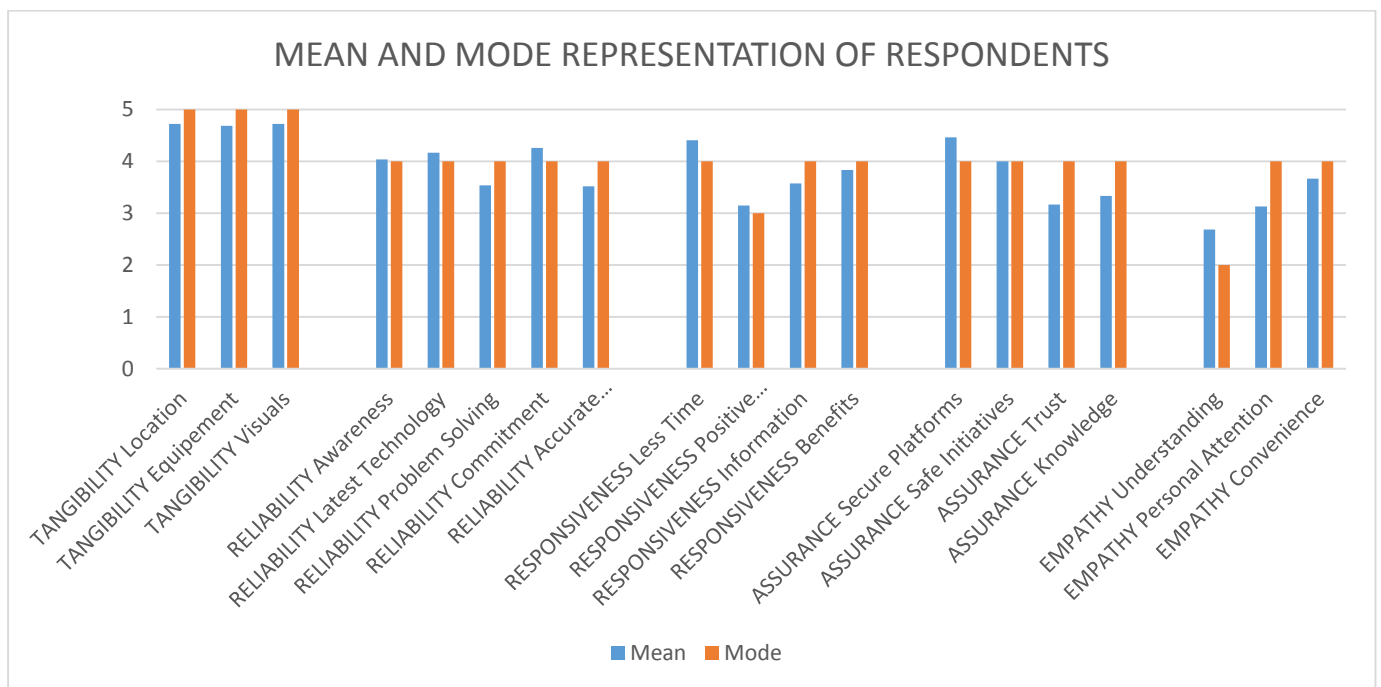


Figure 11: - Result Analysis of Respondents through Mean and Mode



It can be noted that above shown Figure shows a high score of mean and mode in most places while it scores low especially in the Empathy section. The above mentioned Figure represents the analysis based on the following factors: -

- **Tangibility:** - The services measured with this function are ATM's, internet banking, mobile banking and relationship banking. The respondents scored a very high mean and mode on this particular factor than the other factors. We can see a very high mean for locations, visuals and equipment provided by the State Bank of India. The locations have proven to be the strongest point for State Bank of India because of its nature of being a public bank and not a private bank. On the other hand most of the respondents referred to the State Bank of India as able to provide with the most advanced equipment and technology related devices. The visuals provided by the Bank are also quite pleasing and attractive for its customers. The mean score for all statement under this factor are no less than 4.7 out of 5 while the mode of all 3 statements is 5.

In order to measure the Customer Satisfaction level the ideal or the expected value of each statement is taken to be a perfect '5'. For the statement regarding the locations the respondents answer very highly and we see a score of 4.72 compared to the perfect score of 5 which is next to perfect. The same is for Equipment and Visuals where the mean score is around 4.69 and 4.72 respectively when measured against the ideal or perfect score of 5.

**Thus the customer satisfaction for this function can be said to be very high**

- **Reliability:** - The services that are analyzed within this function are relationship banking, internet banking, RTGSS and ATM's. The respondents scored a very average mean and mode for this particular factor. Among the statements commitment from employees scored the highest mean. While the average mean score the other statements are around 4.

In order to evaluate the Customer Satisfaction level this particular factor was also compared with the ideal model or expected level from customers. The expected level from customers is set to be 5. The statements regarding Awareness scored a mean of 4 and a mode of 4 whereas latest technology updates scored 4.17 and a mode of 4. The problem solving level of employees with the use of technology and providing accurate information were scored low around 3.54 and 3.52 respectively whereas commitment of employees was rate to be around pretty average of 4.26.

**Thus the customer satisfaction for this function can be said to be high**

- **Responsiveness:** -The services that are analyzed for this function are relationship banking pertaining to the customer service towards the customers, mobile banking and internet banking. This particular factor aims to understand the employee's responsiveness towards the customers using technological means. The respondents rated the statement of this function in an average manner with a mean of around 4 for all statements. The positive behavior was scored low by the respondents with a mode of 3.

The customer satisfaction level when compared with the expected measure of respondents was found to be quite good. A high mean of 4.41 represents the time consumption for customers due to the introduction of technological innovations such as mobile complaint registration. This score of 4.41 when compared to the score of 5 is seen as pretty good and results in high customer satisfaction among customers. The positive behavior of employees regarding willingness to help or initiating help towards customers is measured to be quite low. The respondents measure this attribute at a low of 3.15 as compared to expected of 5. For the statement of providing technology related information to customers the respondents scored a low of 3.57 as compared to an expected of 5 whereas while informing customer regarding the benefits of using technology through technological means the average for the statement is measured to be at 3.83 against and expected of 5.

**Thus the satisfaction level for this particular function could be said to be average**

- **Assurance:** - The services that are analyzed using this particular function are the relationship banking, internet banking, mobile banking and ATM's. There was a mixed opinion regarding the statement for this particular function. The mode of all four statement for this function is calculated to be 4. However, the State Bank of India scores quite low on the aspect of Trust and Knowledge.

The customer satisfaction level is again measured against the expected value set at 5. For the statement for trust and knowledge the respondents scored a low mean score of 3.17 and 3.33 against a score of 5. However, in terms of providing safe and secure technological platforms a high mean of 4.46 was scored against an expected of 5 whereas introduction of technological based services are scored at a means of 4 against 5 in terms of being safe and comfortable to use.

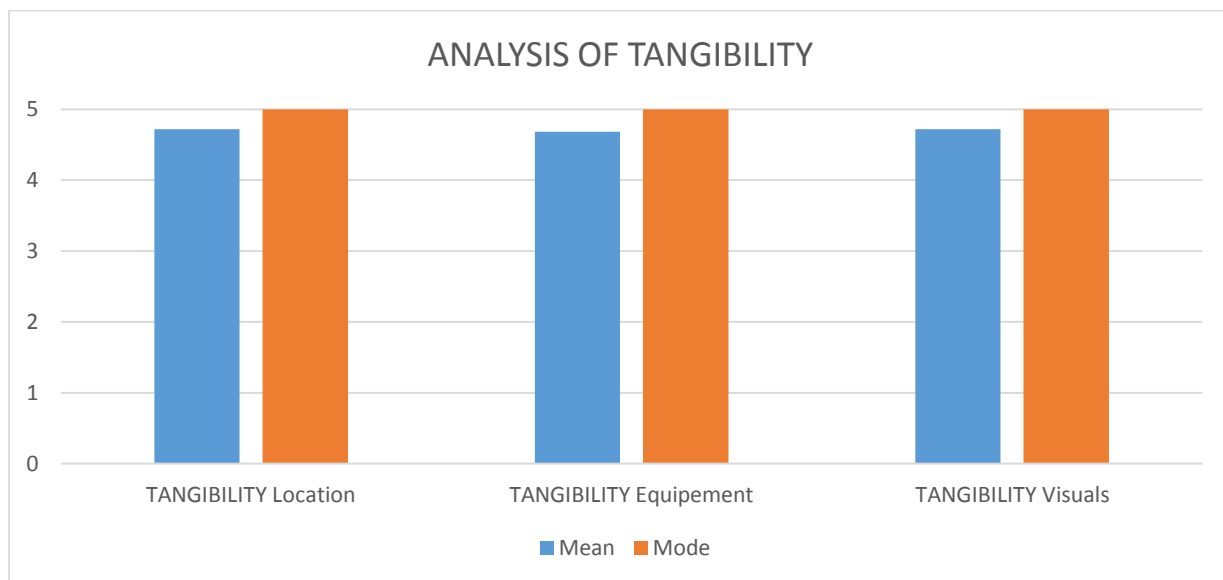
**This the customer satisfaction level for this function is said to be high**

- **Empathy:** - For this particular function the researcher has analyzed all the services being provided by the banks because this function refers primarily to the understanding of customers' needs and

wants. This particular function received the lowest score among all the other functions. The mode of the 3 statements of this functions went down to even 2 and 4 and 4 respectively.

When measuring customer satisfaction level against the expectations of the customers it is found from the respondents that they are very disappointed with the way the banks understand the needs of the customers. With a low mean of 2.69 against a perfect score of 5 the statement of understanding the customers' needs for technological innovations was concluded. However, with means of 3.13 and 3.67 providing personal attention to customers and convenient banking hours are being rated against the score of 5.

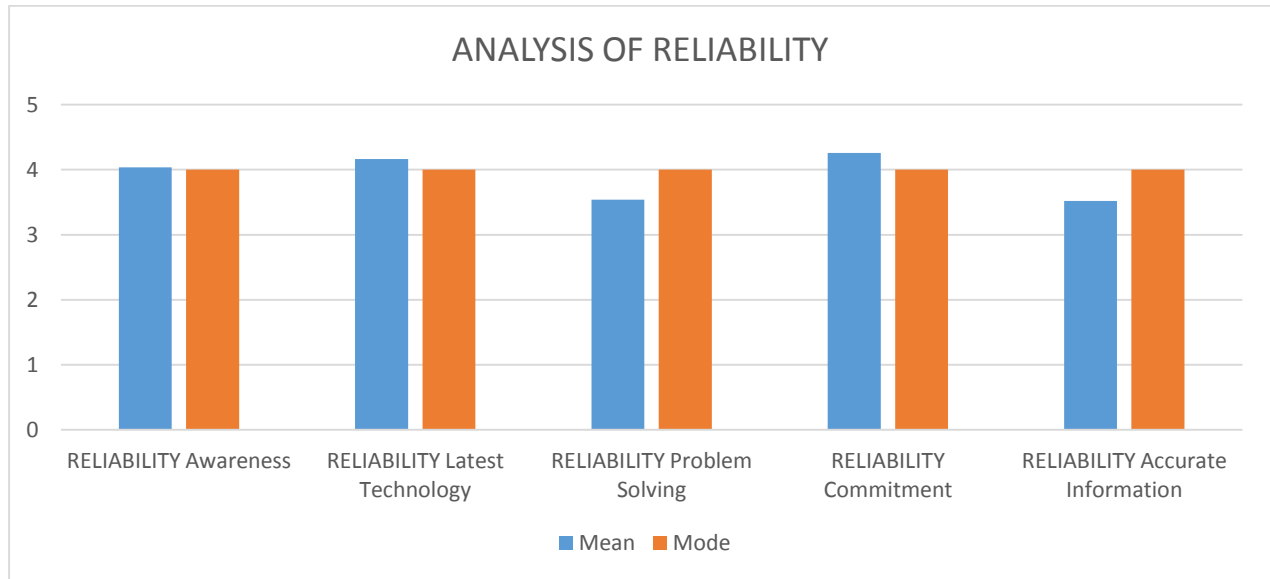
**Thus the customer satisfaction level for this function is said to be average**



**Figure 12: - Analysis of Tangibility**

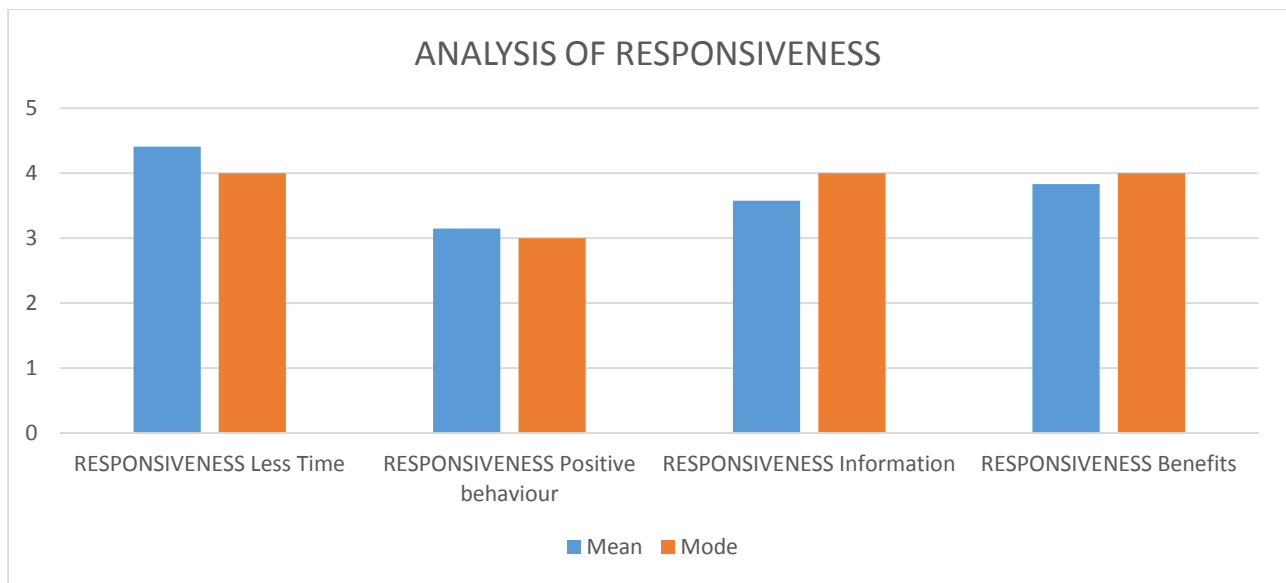
The above mentioned Figure represents the function of tangibility which is used for measuring the customer satisfaction involving all the physical attributes associated with banking services which are a result of technological innovation. The respondents have rated very highly towards this particular function. This can be attributed to the fact the technology does change the way banks have started operating nowadays. Being a public bank, State Bank of India enjoys privileges from the government thereby reaching to the farthest of locations. It is a fact that if not a branch then at least SBI ATM's could be located at the remotest of the places in India. SBI banks having tie ups with the majority of the functioning banks in India allow customers to use ATM's of other banks as well without any extra charge. This has been made possible because of technology. Latest banking machines, ATM's, card scanners,

YATRA card (International travel card), etc. have been the latest technological equipment which SBI has been providing to its customers for a quite a few years now. What can be said is that technological innovations have played a major role in attracting customers and have become a face of State Bank of India.



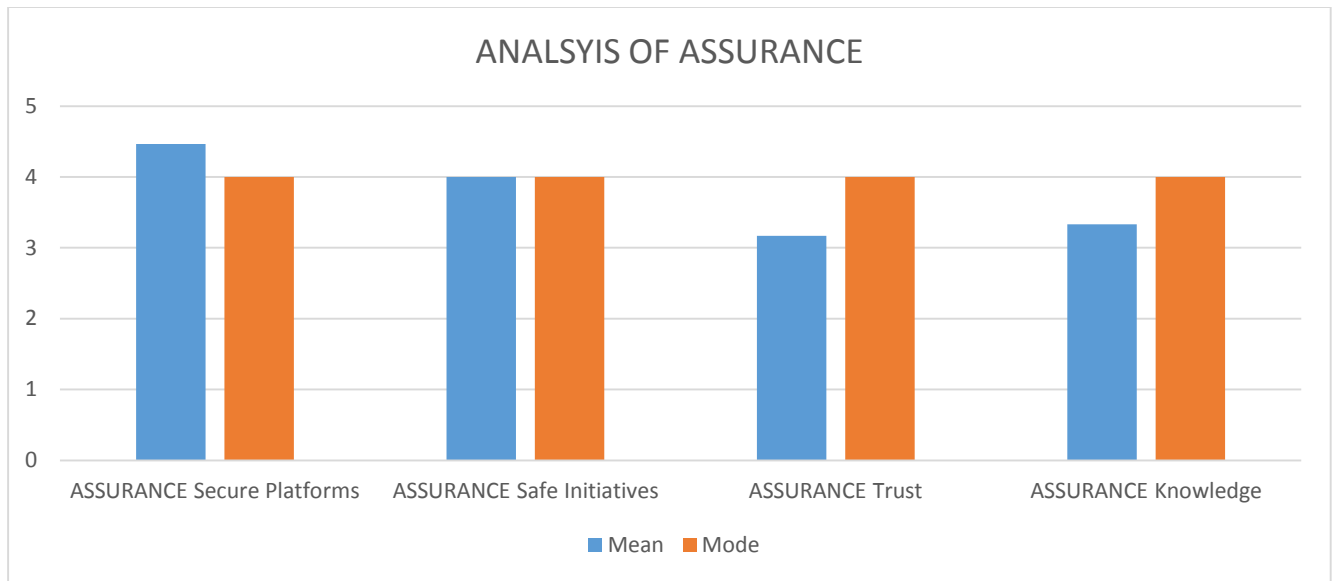
**Figure 13: - Analysis of Reliability**

The above portrayed Figure shows the function of Reliability. This particular function has been evenly spread. It can be seen that customers of the SBI are regularly. The bank not only used personal and face to face relations to convey information but also uses a variety of tools such as mobile messages, or emails to bring it to the attention of the customers some new and accurate information. However, this service has been scored a low around 3.52. In terms of making commitments to customers the employees perform fairly well with a mean score over 4 however, SBI is not yet able to use technology to solve a majority of the problems of customers. This failure could be attributed to the fact that not proper infrastructure is provided in all over India, power failure, technical issues, etc. are common problems which occur daily. However, such large issues are not to be handles by the SBI and are definitely not under its control. However, what is in its control like spreading awareness through not only media or advertisements but also through emails and messages. What SBI has been able to do successfully as per the responses of the customers is that they been able to provide updated technological innovations.



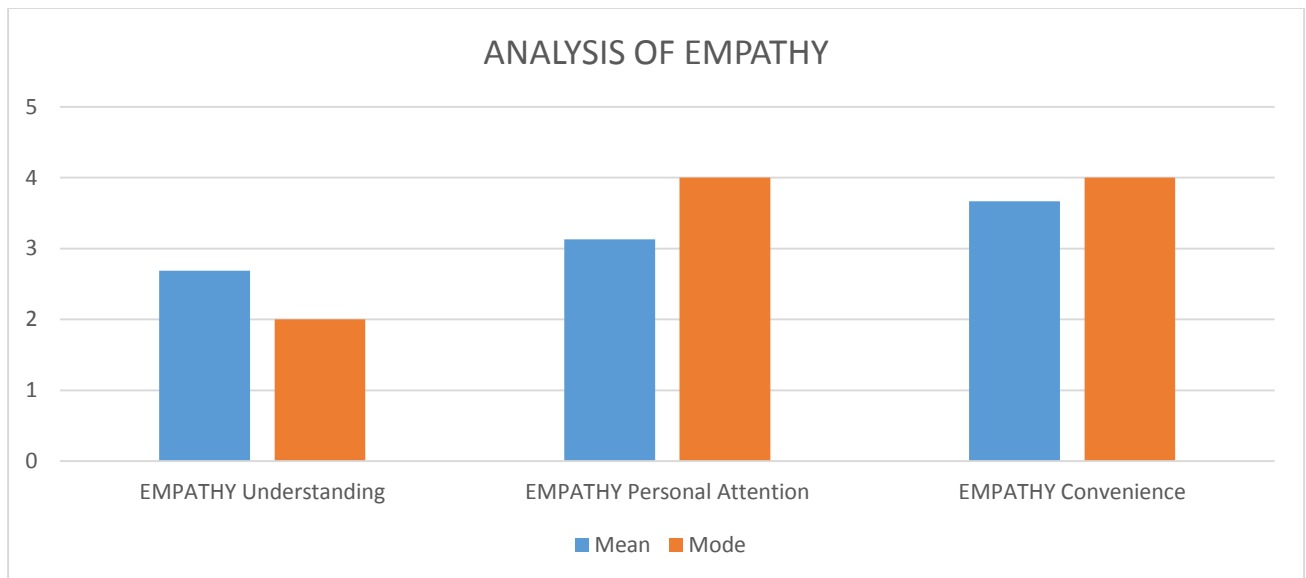
**Figure 14: - Analysis of Responsiveness**

The above shown diagram represents the analysis of the function of Responsiveness. This function has been measured differently for different statements with respect to customer satisfaction level. A majority of the respondents presented a low score towards the employee’s behavior towards the customers. This drawback could be attributed to the fact that the working and the means of operations at State Bank are like a typical government office. Therefore, they really do not care or put an extra effort from themselves to help out customers. Sometimes, there are cases where the employees are themselves not aware of the technology related services. Thereby giving a very bad image of the bank in the minds of the customers. An initiative launched by the SBI to register complaints via mobile has been appreciated by the customers in a big manner. Respondents have clearly indicated the benefits of using the technological innovations that have drastically helped them to improve their banking operations. There have been some instances that the customers are unable to avail the benefits arising from the technological innovations due to lack of infrastructure in many parts of the country or not effective connectivity to the internet.



**Figure 15: - Analysis of Assurance**

The above shown Diagram represents the analysis for the function of assurance. The State bank of India is successful in giving assurance or guarantee to its customers regarding the safe and secure usage of technological innovations. A majority of the respondents are very satisfied with the secure online platforms of State Bank of India. The customers feel secure when they enter their credit card details online. The extra safety feature where when using the banks credit card, the customer gets a code on his personal mobile phone which is to be entered in order to make the payment successful. This technological advancement has increased the customer satisfaction by great leaps.



**Figure 16: - Analysis of Empathy**

The above shown diagram represents the analysis related to the function of Empathy. The respondents measure a reasonable score for the SBI to provide convenience. The convenience is measured on the basis of ATM's location, 24 X 7 working facility and access to the SBI online server at any time wherever there is access to the internet. What it lacks is the employees understanding of the needs for its customers. For example, services like internet banking or mobile banking are not suitable for people who live in rural areas since they either do not have access to internet or smartphone or they are not educated enough to use them. They really rely on traditional banking services. Therefore, when looking at customers there should be provisions to help and make convenient innovations to be used by people from all sections of the society. Having adapted the government style of working most branches of the SBI are not able to give full attention to its customers like private banks do.

To summarize the empirical research the following were the key findings: -

**Table 6: - Summarizing the key findings**

Factor	Findings
Tangibility	<ul style="list-style-type: none"> <li>• A maximum of respondents were satisfied with the location of banks and ATM's machines across the country</li> <li>• The physical appearance at State Bank of India Kottayam branch and even its online portals is visible appealing for the customers</li> <li>• Customer Satisfaction level is very high</li> </ul>
Responsiveness	<ul style="list-style-type: none"> <li>• A majority of the respondents were not satisfied with the behavior of the employees of the bank</li> <li>• The respondents believe that the employees can help customers more with the use of technology</li> <li>• The respondents feel that the role that technology has played in submitting complaints via mobile is very innovative</li> <li>• Customer satisfaction level is average</li> </ul>
Reliability	<ul style="list-style-type: none"> <li>• Banks introduces and makes initiatives</li> </ul>

	<p>regarding new technologies</p> <ul style="list-style-type: none"> <li>• Banks approach towards solving customer related problems are not being addressed efficiently</li> <li>• The Bank updates technology frequently</li> <li>• Customer satisfaction level is high</li> </ul>
Assurance	<ul style="list-style-type: none"> <li>• Most of the respondents feel that the online platforms (technological) are safe and secure to use</li> <li>• Some customers found that the employees themselves are not aware of the technological advancement</li> <li>• Customer satisfaction level is high</li> </ul>
Empathy	<ul style="list-style-type: none"> <li>• Even though most customers are happy with the services yet a majority of the respondents feel that their needs and want require a better understanding</li> <li>• Most respondents feel that the professional approach from the bank employees is missing</li> <li>• Customer satisfaction level is average</li> </ul>

Based on the above findings, the researcher ends the master thesis with conclusions and recommendations to make things better at State Bank of India Kottayam branch.



## CONCLUSIONS AND RECOMMENDATIONS

Globalization and advancements in technologies have increased the competitiveness level among banks. A study focusing on the impact of technological innovations brought about banks upon the customer satisfaction seems to be of greater relevance. The researcher's study and analysis helps in exerting the importance that technology based innovations have influence upon customer satisfaction. According to Ferreira (2003), technology might be able to develop innovative banking initiatives, however they also result in loss of personnel contact and career stagnation as put forward by Ramos (2011). Over the last decade or so technology has played a crucial role in initiating various innovative services and banks have successfully implemented resulting in influencing customer satisfaction

The researcher is able to draw a successful relationship between the customer satisfaction and the technological innovations. Functions such as tangibility, responsiveness, reliability, assurance and empathy are linked with quality services which in turn result in providing an increase in customer service. Technological innovations has helped State Bank of India to create a satisfactory environment for its customers. Innovative initiatives with the help of technology are linked with the various functions in order to provide the customers of the State Bank of India satisfaction and trying to fulfill their needs. It is impossible for State Bank of India to fulfill the needs of all segments of the country due to lack of infrastructure but whatever facilities are available those are easily accessible.

The State Bank of India has not only successfully launched various innovative initiatives such as the Unhappy Message, the One Rupee branch, etc. but also brought various technological services within the reach of the people and its customers in India. The 'Yatra' card initiative has helped State Bank of India to go global as the users are able to use the card internationally with low interest rates and easy money transfer. Net banking and mobile banking app has made life so much easier for the customers to make banking transactions. The research findings based on the questionnaire was able to gather the following data: -

- 46.2% of the respondents felt that their needs for services were not understood by the State Bank of India
- 46.2% and 48.2% of the respondents felt that the employees at the SBI were not having enough knowledge regarding the innovative services and there was not enough initiation in solving customer problems respectively.

- 72% of the respondents were very satisfied with the location of the SBI branches and the ATM's where as 28% of the respondents were quite satisfied with the locations
- 88.8% of the respondents felt that the State Bank of India provided service quality by updating and provided new innovative technology as means of service delivery
- The majority of the respondents felt that the online platforms for internet banking or the Credit card payment portal are safe and secure for usage

Based on the research findings and analysis the following recommendations are being deciphered: -

- As per the research findings ATM services provided by the banks gave most customer satisfaction, besides the traditional services provided by the ATM's in common, State Bank of India can add some more day-to-day essential services to it. If an ATM was made multi-functional by adding services such as credit recharges for mobile devices, bill payment services and ticketing services it can increase the customer satisfaction as ATM's will be a one stop convenient place for conducting day to day services.
- One of the main problem that rural India faces is not only lack of infrastructure but also the illiteracy of people. Multi lingual ATM's and voice activated ATMs are innovative ways for people who cannot read and write. To provide security the ATMs could use bio metric services and it will be beneficial for them. Introduction of bio metric ATMs with voice activation is a technological solution which can help the banks to provide its services for people who are illiterate. Since people in the rural areas finds it difficult to adapt to technology as fast as to urban population, bio metric ATM's with finger print scanning or face-eye recognition technique with arrangement of basic facilities such as deposit and withdrawal services will be helpful for them.
- The rural areas of India has also a large number of people without the access of banking services due to weak communication links and satellite banking is a way were the banks can use satellite technology for forming connectivity between branches, this mainly helps electronic fund transfers from rural and hilly areas were most of the districts are underbanked. Since a major problem in the villages is the connection to the internet, another recommendation for the State Bank of India is to have an employee carry a laptop on a bike or a car to the village are. This employee can not only educate the people on how to use the technology but also demonstrate how to perform various banking operations.

- To increase the customer satisfaction level, State Bank of India can improve its Core Banking Solutions. Core banking allows all branches of a bank to work as a network and helps its customers to operate their accounts from any branch. Since State Bank of India has more than 13,000 branches all over India and more additions of those branches to the core banking network increases the span of its operation. A customer who has account in the southern part of India can deposit money for a person who has account in Northern part. This also assists in centralizing data management which supports internet and mobile banking services. Also core banking services helps the banks to execute all of its operations regarding transactions under one technological platform.
- Being the largest public sector bank, State Bank of India can collaborate with giant technology vendors like Tata Consultancy Services, Infosys etc. for providing specialized softwares for helping them in retail and corporate banking, internet banking, card management systems which will improve service quality. They can also cooperate with Indian telecommunication companies like Airtel, Vodafone to improve and promote their banking application for smartphones.
- Considering the typical government approach followed by the State Bank of India, it must be taken into consideration that customer-employee interaction is one of the most effective elements necessary for customer satisfaction. The bank needs to pay more attention towards this element and try to improve such interactions. Based on the research findings it is evident the customers feel that customer service and the knowledge of employees at the State Bank of India is not competitive therefore the bank manager or the management of State Bank of India must deploy methods to increase the relations between customers by providing them with a more professional manner. Research showed that 48.2% of the customers feel that the bank employees do not show a sincere interest or initiative in solving their problem and it is apparent that this attitude must change in order to increase customer satisfaction. Another 46.2% of the respondents believe that the employees of the State Bank of India were not able to understand the needs of the customers.
- State bank of India is public bank whose business run upon providing banking services to the customers. However, when compared with foreign and private banks, State Bank of India falls short in not in terms of providing services but how the customers are being handed and taken care of at banks. Providing continuous trainings and seminars on technology based services and their effective uses can help employee become more efficient in enhancing the customer-bank relationships. The research findings revealed that at times employees were not aware of certain

technologies or were not having information therefore to avoid such instances in the future trainings are essential. A 46.2% of the respondents felt that the staff at State Bank of India had not sufficient knowledge or were not sure whether the employees were competitive enough when compared to private banks regarding the technological innovations or their usage.

- To spread awareness of internet and mobile banking and its usage among the rural areas so that the more people are involved in using the initiative. It is common knowledge that the majority of the population of the rural parts is uneducated therefore a detailed training program needs to be administered in order to not only make them aware and use the technology but also initiate them with the various advantages of the technological innovations
- State Bank of India might have mobile facilities such as “Unhappy Message” where complaints could be registered by just sending a message. However, it has been acknowledged that even though there exists such service but there is little or no action taken to resolve them immediately. State Bank of India must understand the needs and wants of the customers and therefore it is essential to not only acknowledge the customers complaint but also provide remedy for it.
- SBI should continuously work towards identifying the needs of the customers in order to further equip themselves with various innovative initiatives in order to meet those customer needs. While doing this, SBI would be able to regularly meet with the expectations of the customers therefore satisfying their needs through innovations.

## **APPENDIX**

QUESTIONNAIRE FOR MASTER THESIS- INCREASING CUSTOMER SATISFACTION LEVEL WITH SERVICE QUALITY OF STATE BANK OF INDIA THROUGH IMPLEMENTATION OF TECHNOLOGICAL INNOVATIONS

A study based on the customer's opinion about innovations brought about by SBI bank

Dear respondents: Please respond to the following questions regarding innovations at your SBI branch

1. Name: -
2. How many years have you availed the facilities of the researched SBI branch?
3. Income Range(Rs per month)
  - Less than 10000
  - 10000-50000
  - 50000-1,00,000
  - More than 1,00,000
4. Age
  - 18-25
  - 26-35
  - 36-45
  - 45-50
  - 51 and above
5. Gender
  - Male
  - Female
6. What is your occupation?
  - Employed
  - Professional
  - Business
  - Student
  - Retired
  - Homemaker
7. What kind of innovation are available at your SBI branch?
  - Relationship banking
  - Automatic teller machine

- Telephone banking
- Internet banking
- Branch Networking
- Electronic Funds Transfer
- Real time Gross Settlement System
- Mobile banking

8. On a scale of 1-3, where 1=Not innovative, 2= Innovative and 3=Very innovative, please rate the following services accordingly: -

Relationship Banking			
Automatic Teller machine			
Telephone Banking			
Internet Banking			
Branch Networking			
Electronic Funds Transfer			
Real Time Gross Settlement System			
Mobile Banking			

Measure of Customer's satisfaction: -

Expected	Perception	Strongly Disagree	Disagree	Neural	Agree	Strongly Agree
<b>Tangibility</b>						
Excellent bank with modern equipment with a large ATM network	Your SBI branch has modern equipment as well as large ATM network					
Bank has convenient branch locations	SBI branch is conveniently located					
Materials	Materials					

associated with banking services are visually appealing	associated with SBI's banking services are visually appealing					
<b>Reliability</b>						
Bank provides accurate information related to banking services and their usage	The SBI branch provides accurate information related to banking services and their usage					
When banks make a commitment then they abide by it	When the SBI branch makes a commitment then they follow through					
The bank shows a sincere interest in solving customer problems associated with various innovative services	The SBI branch shows a sincere interest in solving customer problems associated with various innovative services					
The Bank implements updated technology in its services	The SBI branch implements updated technology in its services					
The bank spreads awareness regarding the new technology	The SBI branch spreads awareness regarding the					



based innovative services	new technology based innovative services					
<b>Responsiveness</b>						
The bank informs customers regarding the benefits of the various innovative services	The SBI branch informs customers regarding the benefits of the various innovative services					
The employees of the bank will provide all technology related information and prompt services to its customers	The employees of the SBI branch provides all technology related information and prompt services to its customers					
Employees of the bank always are willing to help customers with using technological banking services	Employees of the SBI branch always are willing to help customers with using technological banking services					
The bank's mobile banking facility provide customer requests in a shorter time	The SBI branch's mobile banking facility provide customer requests in a shorter time					

<b>Assurance</b>						
The bank's employees relationship with the customers instills confidence in customers regarding the innovative banking services	The SBI branch's employees relationship with the customers instills confidence in customers regarding the innovative banking services					
Customers of the bank feel safe when using the innovative initiatives	Customers of the SBI branch feel safe when using the innovative initiatives					
The banks online platform is secure for your credit card and account details	The banks online platform is secure for your credit card and account details					
Employees of the bank have adequate knowledge to answer customers questions related to technological innovations adopted by the bank	Employees of the SBI branch have adequate knowledge to answer customers questions related to technological innovations adopted by the bank					
<b>Empathy</b>						
Customers at the bank are given individual attention	Customers at the SBI branch are given					

	individual attention					
Bank has operating hours convenient to all their customers	The SBI branch has operating hours convenient to all their customers					
Employees of the bank give personal attention to the customers	Employees of the SBI branch give personal attention to the customers					
The employees of the bank understand the specific needs of their customers	The employees of the SBI branch understand the specific needs of their customers					

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