

# Relationship between Service Quality and Customer Satisfaction: A study of internet banking

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## Abstract

Objective of the research is how to manage the service quality in internet banking to improve the customer's satisfaction and to examine the different dimensions of service quality to relate them with expectation of customers. A detailed literature review related to this study was also mentioned to develop a reference list of related authors. Methodology used for this research is to conduct a survey through structured questionnaire. A quantitative research is carried out by using a structured questionnaire to get a better understanding of this issue. Empirical data were collected through survey of the employees or professionals using internet banking services. Data presentation and analysis was done according to frame of reference and applied statistical tool SPSS. Descriptive Statistics, Correlation and Regression tools were used for analysis purpose. Results have shown that service quality dimensions used in the research are better representative of the customers' satisfaction regarding internet usage.

**Keywords:** E-banking, Service Quality, Efficiency, Reliability, Responsiveness and Privacy

## 1. INTRODUCTION

The first chapter in this research project includes the background of the selected topic followed by problem discussion that will provide the reader with an understanding of research area. At the end of the first chapter, research problem and research question are also presented after the problem discussion.

### 1.1 Background

In this section the back ground of this research is discussed. General concept of e-commerce, e-banking, role of e-commerce and technology and general perspective of internet banking is discussed in this section. Most importantly, how much the consumers are satisfied with the usage of internet banking and what are the expectations of consumers regarding the service quality of internet, is discussed.

#### 1.1.1 E-commerce

In the business world e-commerce is thought to be an important topic of discussion. It provides an easy way of transaction through computers (Daniel, Wilson,& Myers, 2002). It provides reformation and reshaping the relationship between the customers and the suppliers. Kalakota and Whinston (1996) defined e-commerce as "the buying and selling of information, products and services through computer networks." E-commerce is the easiest way for the professionals to use computer transactions. World Wide Web system is the most reliable source of getting the business information and better application solutions. World Wide Web provides the information about buying and selling, distribution, communication, customer services, payment, processing and delivery among customers' and suppliers. Most of the organizations worldwide are adopting this system because it helps them to market their products and services online and it also helps them assist their customers directly through internet about their respective services and products without any human support. With the help of e-commerce customers can perform wide range of activities e.g. they can change their account settings, securing credit card information or loan, purchasing the required product through online shopping and much more (Molla & Liker, 2002).

#### 1.1.2 Role and activities of e-commerce

In the last few years there is an extensive growth of internet-based services. Banking industry is at the top of the list of the industries adopting internet based services. Internet banking happens to be a most prominent

advancement in information technology and it also changes the way the corporation conducts business with customers. Banking industry has taken a competitive advantage over the other industries by adopting internet banking services. World Wide Web and global e-commerce has blown up the internet population. Internet users are multiplying and spreading across the world rapidly. It has opened an incredible business opportunity to its users. The most common activities that e-commerce has offered to its customers are online shopping, online banking, investment and online electronic payment for internet services (Awad, 2000).

### **1.1.3 Customer satisfaction in e-commerce**

Customer satisfaction has become a critical issue in the success of the organizations. It has become a tradition to conduct a survey on customer satisfaction because organizational performance and market shares depend on the loyalty and satisfaction of the clients. It is also important to develop a long term relationships with the clients (Patterson et al., 1997). To understand the customer satisfaction in e-commerce perspective, researcher must have the clear understanding of the meaning of customer satisfaction. Customer satisfaction is the result of effective evaluation, where comparison standard is actually compared with perceived performance. This means that if the perceived performance of is less than the expected, customer will be dissatisfied and vice versa.

In internet banking, service quality is one of the key factors that lead to the success of the organization. It is the key to measure the success of the organization. Several studies have been conducted to determine the major instrument that has a substantial impact on customer satisfaction. One of the most widely used instrument to determine the customer satisfaction is SERVQUAL developed by Zeithaml et al. (2002). In this study the researcher has used the same instrument and paid much attention to determine the relationship between service quality and customer satisfaction.

### **1.1.4 Measuring the online service quality**

After the in-depth study of literature review, the researcher concluded that several dimensions of service quality could be used to determine the relationship between service quality and customer satisfaction. Researcher has argued that service quality cannot directly applied to internet banking system, because it has some sort of unique service delivery process involved in it. Different dimensions of service quality have been adopted to measure the electronic service quality. Selection of service quality dimensions is based on literature review. Zeithaml et al. (2000) provided the first formal definition of electronic service quality. According to them "e-SQ is defined as the extent to which a website facilitates efficient and effective shopping, purchasing and delivery of products and services." Several authors developed different tools to measure the service quality. But the instrument developed by Zeithaml et al. (2000) measure the service quality to judge the perception of the customer related to service quality. Efficiency, reliability, responsiveness, fulfillment and privacy are the different dimensions of service quality, taken from the in depth study of literature review, used by the researcher to measure a relation between customer satisfaction and service quality.

## **1.2 Problem discussion:**

In the era of advance information technology every organization is in race to compete the other. Each of the organization across the world is adopting information technology as a major tool to success. In a competitive market it is difficult to understand the need of the customer. But it has become an important factor to understand the requirements of the customers to achieve a success. Organizational success totally depends on the satisfaction of the customers'. They help them to improve their market shares and attain a competitive edge in all industries. Customer attention and retention has become the motive of all the organizations particularly in internet based services, as customer can easily assess all the information regarding anything at any time. According to Riel et al. (2001), it has become very important to study the determinants of customer satisfaction, because in the running time the cost of acquiring new customers and turnover rate in many of the online services is very high.

For all the business operating in electronic commerce, customer satisfaction is one of the major issues to be resolved. Good customer relations help in improving the market shares and returns of the company (Slu & Mou, 2003). It also provides information about the future of the business that whether the business will survive or not. In order to overcome this situation a service quality criteria is determined to measure the satisfaction level of the customer.

With the advancement in technological based services, companies are introducing advance high-tech services. It is assumed that internet services are very new to the organizations, so it provides them competitive edge over the other and it also add value to the existing services and product. Recently many banks have adopted this system and installed an internet based services for the ease of the customers. Internet banking involves non-human interaction between customer and service provider than the traditional banking system. Provides fast speed, relevant information, and quick responses to complains and just in time delivery of services in market place can improve the information sharing among bank and the customer. It is important for the banks to provide high service quality to its customer to survive in market. For this banks need to first develop a criteria on which it can judge the perception of the customer about the respective service quality dimension.

### 1.3 Research problem and research question

Based on problem discussion the research problem for this study is as follows;

- To get an idea about service quality dimensions and how it affect the customer satisfaction in banking sector

#### Research question:

**Q1.** What are the service quality dimensions in internet banking and how do they affect customer satisfaction in internet banking?

### REVIEW OF LITERATURE

According to Lai et al. (2000), electronic commerce is integrated into all dimensions of businesses. One dimension of e-commerce is e-banking. Electronic banking is used everywhere now a day. Electronic banking accelerates the banking industry to gauge competitive advantage over the traditional banks. E-banks can provide efficient, reliable, secure and cost effective services to the users, such as online payment, online account information and online transaction. This research paper is designed to find out the factors that influence the perception of the customers about the use of internet banking. Questionnaire method was used to check the behavior of respondents. A sample of 178 respondents was surveyed which showed that all the environmental, organizational and globalization factors will affect the customer satisfaction with e-banking. The results of the survey showed that internet banking has more eye-catching influence on the customers using internet banking and those who are using internet banking are more likely to use the internet banking more frequently. Because the degree of penetration of technology in the customer is very fast that they think internet banking is the blessing of technology. It makes their work very easy and they embraced it quickly.

E-banking is a single click between the customer and the bank (Bello, 2005). It provides the customer with rapid growth and much better results than human teller system. It allows the customers not to visit the bank regularly because it is very difficult for the business personnel to come to the bank for their transactions each day. Studies have shown that E-banking leave a positive impact on the customers. It was observed that the service quality in manually operated organizations was not as good as they were seen in fully automated organizations. E-banking is now spread all over the world that no country has a choice of not to implement the internet banking in its organization. This improvement makes the banking services more effective and attractive for the customers. E-banking has provided a competitive edge to the other non-internet banks. Although the internet banking is adopted by almost all the banks but care has to be taken that not the entire population is aware of this unique invention. Strategies must be developed to make the people aware of this technological advancement. Beside this there is another very important issue that needs to be addressed is the issue of security and privacy. Banks should develop a confidence among the customers regarding the use of internet banking. They should also ensure the better connectivity and security systems that will enable them to serve customers faster and maintain their privacy.

Trust plays a vital part in acceptance of any technology (Poon, 2008). The use of internet banking in today's era make the people more conscious about its use. They think that the internet banking is not a more reliable source because there are the cases of thievery of identities or email dodge but this is not the case in reality. Protection and confidentiality are the two main factors that influence the behavior of the customers towards internet banking. When survey was conducted it was observed that most of the people were dissatisfy with the honesty

and confidentiality policy of the internet banking but another amazing result was found that people were convince about the design of internet banking. In order to improve the trust of the customers there should be good marketing strategy adopted in case to strengthen the internet banking among the people. Banks have the duty to clearly demonstrate the services provided in case of internet banking, in addition to it, the banks should focus on improving and protecting the personal information and transaction.

According to Yap et al. (2009), traditional banking system provides a way to the internet banking system and helps the customer to build their trust in the e-banking services. It is observed that the size and the reputation of the bank can only provide the structural assurance to the customers if the traditional banking system is present. Those customers who lack the knowledge of internet banking mostly rely on the staff of the banks to guide them about the features of internet banking, help them to make an e-banking account and password, resolve the problems of e-banking website and provides clarifications to the issues related to e-banking services. Such services can only be provided at the counter if the customers feel hesitation of adopting new system. The factor of trust is very important for making the customer more attractive towards it. Management should make such policies that can build the trust among the employees. It is observed that the promoting activities play a more important role in grabbing the attention of the customers. Delightful service packages, cost effectiveness and speediness enhance the satisfaction of the customers' towards internet banking. Customers perceive that the good services they receive at the counter is indicative of the services they are going to get online. So building the trust among the customers requires better management strategies.

Dimitriadis, Kouremenos, and Kyrezis (2010) have carried out similar research on consumer's perception. They identified the trust as an important variable in categorizing and predicting the behavior of customers in self-service technology. In this study trust is recognized as segmentation variable. They are very keen to observe the impact of trust in two banking channels i.e. internet banking and phone banking. The main purpose of this study is to examine factors that differentiate high SST trustors and low SST trustors and to find out whether these levels are consequential in terms of willingness to use SSTs or not. Data, collected through interviews with executives of participating banks, have shown that only half of the customers are using internet banking and one third are using phone banking. They surveyed 762 real bank customers and used discriminant analysis to test the variables differentiating the customers having high and low level of trust in internet and phone banking. Discriminant analysis has shown that the difference in the level of trust is due to attitudinal, behavioral and psychological criteria. It is also categorized that the consumers from different level of trust react different in term if their intention to use SSTs. It has shown that trust based segmentation is very helpful in predicting the behavioral responses towards SST services.

Proenca and Rodrigues (2011) have newly conducted a research on self-service technology used in banking industry. Banks have passionately accepted self-service technology i.e. Internet banking, Phone banking and Automated teller machines so that clients can independently operate banks services without any interaction with bank employees. The use of this study is to evaluate the demographic behaviors of users and non-users of self-service technologies in banking services. Data were collected through telephonic survey. Interview of 300 respondents was carried out based on adult population in terms of age, gender, and geographical places. Six variables of customer performance have recognized for research purpose i.e. Satisfaction, Tendency to complain, Compassion to price, Tendency to change providers, Word of mouth and Intention to repurchase. This study discovered that there is major relationship between self-service technologies and demographic variables. It is found that those who are the satisfied with their banks exhibit positive word of mouth, greater intention to repurchase, less tendency to price, fewer tendency to change banks and a greater propensity to complain. But the users of SSTs have greater tendency to price and complains. This study has not identified a significant positive relation between SSTs and the consumer behavior dimensions but it has shown that customers loyalty with banking service in terms to SSTs have significantly heighten the profits of the firm, lowered the cost, increases the level of purchases, less price sensitivity and positive word of mouth.

## METHODOLOGY

This chapter will give us a brief over view of how the research is conducted. This chapter includes research approach, research strategy, sample selection and data collection method. Reliability and validity is also measured at the end of the chapter for quality assurance.

### 3.1 Hypothesis

**H1:** There is a positive relationship between efficiency, reliability, responsiveness and privacy on customer satisfaction

**H2:** There is a positive impact of efficiency, reliability, responsiveness and privacy on customer satisfaction

### 3.2 Theoretical framework:

According to the objective of this study, this chapter explains the research question i.e. what are the dimensions of service quality and how they are affecting the customer satisfaction in e-banking sector. This chapter will provide the better understanding about the relationship between the two variables i.e. customer satisfaction (DV) and service quality dimensions (IVs).

#### 3.2.1 Service quality dimensions:

Zeithaml et al. (2002) have used seven different service quality dimensions in his study. His main focus was on efficiency, reliability, fulfillment, privacy, responsiveness, compensation and contact. Based on literature review, different authors use different dimensions of service quality to prove their studies. Jun and Cai (2001) identified ten dimensions of service quality which are reliability, responsiveness, competence, courtesy, credibility, access, communication, understanding the customer, collaboration and continuous improvement. After doing literature review I have come out with four major dimensions of service quality that are efficiency, reliability, privacy and responsiveness.

**Efficiency** is about the proper working of the internet services. Customers can get all the information from website easily. It refers to the ability to get the reliable and related information on website.

**Reliability** is related to the technical working of the website. It involves the proper functionality of the website.

**Responsiveness** is related to the customer representative services. It measures the ability of e-tellers to provide timely information to the customers, handling the quarries and complains of the clients and provides online guarantees.

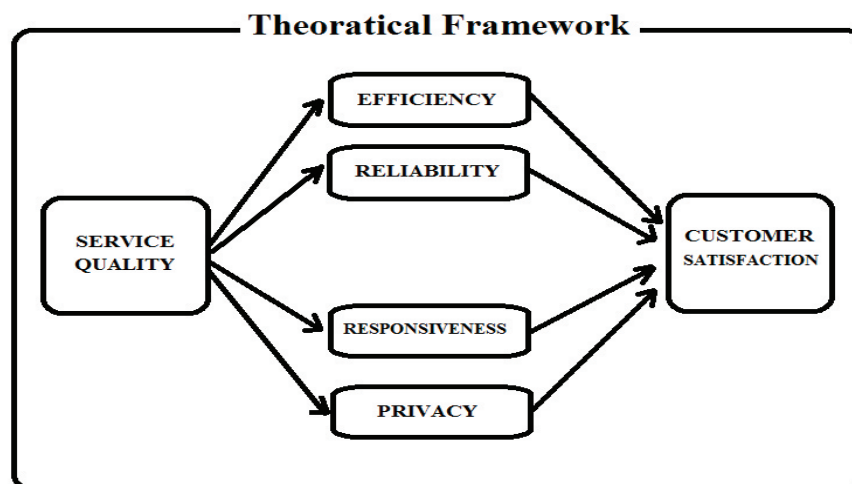
**Privacy** is the most important and mostly preferred dimension of service quality. Customers are reluctant to provide personal data and credit card information on website because of the threat of being theft. So this dimension provides the assurance of security and privacy of data.

With the invention of e-commerce and e-banking, service quality has become a major issue to be resolved in banking sector. It happens to be a major determinant of e-banking to identify the level of customer satisfaction (Caruana and Malta 2002). Wolfenbarger and Gilly (2002) carried out the same research and found out that different determinants of service quality have significantly different impact on customers' satisfaction and consequences of different determinants also varies from customer to customer.

#### 3.2.2 Conceptual framework

Based on the in depth analysis of literature review, the relationship between customer satisfaction and quality dimensions is shown in a following model.





The four service quality dimensions have been taken from the study of Zethaml et al. (2002). Similar dimensions have also been studied by different authors in different researches. For example Liu and Arnett (2000) have mentioned all these dimensions in their studies to identify the relationship between these dimensions in perspective of customer satisfaction.

### 3.3 Research approach:

From the study of related articles, a knowledgeable approach is tends to be qualitative, quantitative or both. The research approach used in this study is purely quantitative.

#### 3.3.1 Quantitative Approach:

Quantitative research method will be adopted by the researcher to analyze the responses of the e-bankers and also involving the interpretation of the subject matter. It involves the cause and effect, limited to certain variables, hypothesis and research question, and instrument used and test of the theories used to support the argument.

Quantitative approach is based on hypothesis testing procedure. Quantitative research begins with study of literature from which a hypothesis is designed. After that an experimental tool is designed to measure the factors affecting the dependant variables. Sample is selected randomly to reduce biasness and chances of error. Quantitative research is deductive in nature based on scientific knowledge and theories. According to Newman and Benz (1998), true experimental designs require strongly controlled, the richness and strength of meaning for contestant may be forfeited. As a validity concern, this may be a drawback of quantitative research.

### 3.4 Research strategy:

Research strategy is about how the researcher will give the responses to the questions that he will ask in research questionnaire. Research strategy will demonstrate clear objective mention in research questions, specify the source from which the researcher will collect the data and the constraints that the researcher will face while collecting the data.

#### 3.4.1 Instrument:

Survey method is most common and economical way to conduct the data of large number of respondents. Survey design involves deductive research and most commonly adopted by business researchers. Structured questionnaires, observations and structured interviews are the useful techniques for data collection. To collect the data for research purpose a structured questionnaire technique is used by the researcher to support her findings.

### **Sample selection:**

Sampling mean by selecting some of the area from the population, researcher can draw the possible results about the entire population. Sampling is also done to reduce cost, to get accurate results and faster collection of data (Cooper and Schindler 2003).

Convenience sampling is used by the researcher to collect the data. It involves selecting the members who can easily provide the required information. Convenience samples enable the researcher to cover large number of population at a very lesser cost and speedily but there is a factor of biasness involve because of the difference of target market (Hair et al. 2003).

### **Data collection:**

Based on broader aspect of research, primary data collection approach is used. Primary data is collected are collected through survey questionnaire.

Quantitative survey was conducted by 125customers using internet banking, who are having approximately 2 to 3 year of experience. Well-structured questionnaire was used to collect the data. Primary data were collected by approaching the people using e-banking services. Most of the respondents are the professionals who do not have enough time to go to banks for manual transactions. Individual background information such as Gender, Age, Profession, their duration of using internet banking and the name of the bank which they are using for online trisection is also collected for demographics. Surveys are conducted to collect information from a large sample of individuals.

Questionnaire was developed according to the variables identified through literature review. The designed questionnaire followed the order of service quality dimensions that are used in conceptual framework. 5 point Likert-scale (1 = strongly disagree, 5 = strongly agree) is used to record the responses of the respondents.

### **Data Analysis:**

After collecting the data from the entire respondent the process of analysis begins. Several interrelated procedures were performed to have a finalized and refined copy of data.

### **Data reduction:**

Data reduction is the major step while analyzing the data. Some of the data were deducted from the research because there are some of the respondents who do not bother to have a look on questionnaire and fill the questionnaire carelessly. This can mislead the results of the research so unrelated data is discarded by the researcher.

### **Data display:**

Organized, refined and compressed forms of data were shown to draw final conclusion. This is the very difficult stage, because entering the data in software requires better understanding of how to use the software and how the data should be entered in rows and columns. Researcher must have proficiency in using software.

### **Conclusion:**

This is the third stage of data analysis, where researcher needs to decide the meaning of things by applying different tools and interpreting the results.

After finishing the data collection researcher will have a finalized and summarized copy of responses based on every variable selected from the in depth study of literature review. For data analysis a statistical tool SPSS 17 is used for input of data and output of results. Statistical tests are applied to have the results with detail description and analysis.

## EMPERICAL DATA ANALYSIS AND DISCUSSION OF RESULTS

This chapter will discuss about the analysis and interpretation of data based on the variables used in this study and their relationship with each other. This chapter shows the statistical representation of data in which data is analyzed by using some statistical tools.

In order to determine the relationship between service quality and customer satisfaction, almost 130 respondents were asked to fill the questionnaire. 5 questionnaires were seem to be outliers and excluded for the sake of convenience in finding and interpreting results. Out of 125 respondents 69 were male and 56 were female laying in the age group of 21-30. Most of the respondents were the employees of banks and rest of the others were also affiliated to some other profession. In this study researcher has used Descriptive statistics, Regression and Correlation to determine the relation between the variables define in this study.

### 4.1 Quantitative data analysis:

Quantitative data obtained from the survey is analyzed by using some statistical tools. The relationship between service quality dimensions and customer satisfaction is described by customer's experiences about these dimensions.

### 4.2 Descriptive Statistics:

Descriptive statistics are used to define the different features of the data. They are used to give information about the distribution of variables. Descriptive statistics are used to examining and exploring the data prior to performing the statistical tools for data analysis and interpretation. Mean and standard deviation are used to check the average value and spread of data across the mean value.

**Table 1 Descriptive Statistics explaining the mean and standard deviation of data**

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
EFFICIENCY	125	1.88	5.25	3.6740	.99898
RELIABILITY	125	1.71	4.86	3.6217	.89366
RESPONSIVENESS	125	1.75	5.13	3.6740	.73915
PRIVACY	125	3.14	5.00	4.1200	.40706
CS	125	2.50	4.83	3.7587	.67649
Valid N (listwise)	125				

#### 4.2.1 Mean:

Mean is defined as the sum of all the observations divided by number of observations. Mean is used to measure the central tendency of data. It gives us the average value of the particular variable. The following table shows the centrally located values of all the variables used in this study. The table shows that the customer satisfaction level is highest for privacy than all the other variables and that the variability among these scores (the standard deviation) is also lowest showing the less dispersion in data.

#### 4.2.2 Standard deviation:

Standard deviation gives us the measure of dispersion which provides information about the distribution of the values of a variable. It tells us that how the values are dispersed around the measure of central tendency. Standard deviation can be computed in three desirable properties. When the data are normally distributed, 68.3% of the observations lie within +1 and -1 standard deviation of the mean, 95.4% with in +2 and -2 standard deviation and finally 99.7% lies within 3 standard deviation.



In the above table it is shown that standard deviation is very less which indicates that values are not much dispersed around the mean. Greater dispersion shows more variation in data and presence of outliers is also identified from the dispersion of data. But in above case, dispersion is very less and all the values reside near the mean value. Hence, it is proved that data gathered by researcher is very significant and there are very small chances of error.

**4.3 Pearson Correlation analysis:**

“The Pearson correlation coefficient (r) is a measure of the linear relationship between two variables.”

The value of correlation coefficient lies between -1 to 1. These signs are used particularly to determine the relationship between the variables. Positive values determine the strong positive relationship between the variables showing that with the increase in one variable there will be an increase in the value of the other variable and negative values shows the strong negative relationship between the variables meaning that if the value of one variable is increasing than the value of other variable must be decreasing.

**4.3.1 Correlation analysis:**

**Table 2 Pearson correlation**

		Correlations				
		EFFICIENC Y	RELIABILIT Y	RESPONSIVENES S	PRIVAC Y	CS
EFFICIENCY	Pearson Correlation	1	.887**	.824**	.564**	.864*
	Sig. (1-tailed)		.000	.000	.000	.000
	N	125	125	125	125	125
RELIABILITY	Pearson Correlation	.887**	1	.907**	.554**	.905*
	Sig. (1-tailed)	.000		.000	.000	.000
	N	125	125	125	125	125
RESPONSIVENES S	Pearson Correlation	.824**	.907**	1	.528**	.875*
	Sig. (1-tailed)	.000	.000		.000	.000
	N	125	125	125	125	125
PRIVACY	Pearson Correlation	.564**	.554**	.528**	1	.614*
	Sig. (1-tailed)	.000	.000	.000		.000
	N	125	125	125	125	125
CS	Pearson Correlation	.864**	.905**	.875**	.614**	1
	Sig. (1-tailed)	.000	.000	.000	.000	
	N	125	125	125	125	125

\*\* . Correlation is significant at the 0.01 level (1-tailed).

The analysis of data is as follows.

### **Efficiency and customer satisfaction:**

The first variable according to frame of reference discussed in this research is the efficiency of internet system, which refers the customers to get into the website easily and find their required products and services associated with it. According to the responses the speed of login and logout of the account is very fast and they can get into the site at any time to acquire their required information.

Service quality for internet users is one of the main aspect which leads to the success of the organization. A system using e-services should be efficient to provide quick information to the customers'. Efficient working of the system is always accompanied with the level of satisfaction of the customers' i.e. if the efficiency of the system will increase it will leads to increase the satisfaction of internet banking users.

Before analyzing that how efficiency and customer satisfaction are interrelated to each other, an investigation has been made by the researcher to identify the relation between the two. Analysis of correlation matrix has shown that the value of efficiency and customer satisfaction is estimated to be 0.86 at the significance level of 0.01. This value has shown that there is a very strong positive correlation between the variables. It means that with the increase in the efficiency of the service quality provided it will result in increase in the level of satisfaction among the customers'. In order to determine the intensity of relationship between the two variables a value of  $r^2$  which is 0.74 shows that there is a very high variation caused by independent variables in dependent variables. Results have shown that 74% variations are caused by independent variable.

The reason behind it is that with the increase in technology organizations are heading towards adopting the new system. Organizations are making their E-Systems more and more efficient so that they can increase their market shares by the customers. So efficiency of internet services matter a lot in the success of the business. Moreover, clients are getting more awareness about this new system. So it is the duty of the organizations to provide them an efficient system to increase their worth.

### **Reliability and customer satisfaction:**

Reliability refers to technical efficiency of website, particularly the functioning of the website, accuracy of information and ability to perform the services that are promised to the customers'.

Quality based internet services provided to the customers' have a strong positive relation with customer satisfaction. Reliability of internet banking identifies that whether accurate and reliable information is provided to the customer or not. E-banking happens to be a reliable source of accurate information if service quality criteria kept into mind. Customers' feel convenient to use traditional banking system because they are unaware e-banking utility. Researcher has conducted a survey to analyze that whether the customers' are satisfied with the reliability of service criteria or not. Analysis of correlation matrix has shown that the value of reliability is 0.91 at the 0.01 level of significance. This value has shown that there exists a very strong positive correlation between reliability and customer satisfaction meaning that customers' are satisfied with this quality criterion. Coefficient of determination ( $r^2$ ) for reliability criteria is 0.83 which shows that only 83% variation is caused by independent variables. With the increase in reliability criteria customer satisfaction is going to increase up to a higher level.

The reason for this dynamic change is that this e-system is new to many organization and customers'. More and more organizations are adopting this system to increase the worth of the organization. The aim of the organization behind adopting this new technology is to attract and retain the new and potential customers. And it seems from the analysis that banking industry is almost successful is increasing their worth because customers are the one who helps in owner wealth maximization. High reliability means providing accurate and timely information leading to high customer satisfaction.

### **Responsiveness and customer satisfaction:**

Responsiveness refers to the customers' representative services offered to fulfill their requirement, handle their queries and solve complains etc. customer representative services are very attractive and helpful in solving their problems. It also involves the timeliness i.e. prompt action to the customers' complains, mailing transactions slips immediately and calling the customer back quickly in order to resolve their matter. If e-banking is

providing these services with a quality criteria than organizations can improve their performance by retaining their potential customers' and attaining new customers'.

Researcher has conducted a survey to analyze the responses of the customers' regarding responsiveness of customer representatives resolving issues to the customers' online. Analysis has shown that the value of Pearson's correlation is 0.88 at the 0.01 level of significance. This value indicates that there is a very strong positive relationship between responsiveness and customer satisfaction meaning that customers' are very much satisfied with the customer representative services provided online. Response of emails is very fast. Customer representatives get back to the customer quickly on his call. So they think that online meeting with customer representative is very fruitful rather than face to face interaction. It is shown that the value of correlation coefficient is relatively high i.e. 0.77, meaning that variation cause by independent variable in dependent variable is 77% which is very high. Customers' are satisfied with this service criterion but room of improvement is always there for the organizations to run properly.

This is because of the fact that customers' submit their quarries to their respective representative at the bank's desk but quick responses are not given back to the customers'. So they think that internet is a basic requirement in organizations and every employee is login to his firms' website so online response is considered to be quicker than face to face response.

#### **Privacy and customer satisfaction:**

Privacy is the major issue that the banks are now-a-days facing. Privacy includes providing security regarding their personal information, data should not be shared and credit card information should be kept secure. Security is one of the important dimensions in service quality of internet banking. This dimension can increase the worth of organization by providing highly secure internet system. According to respondents' privacy and security of personal information are two major criteria of security dimension.

In order to understand the relationship between privacy and customer satisfaction a research is carried out by the researcher. Investigation shows that privacy and customer satisfaction are positively correlated with each other. But the relation is not highly strong as it is shown from the correlation matrix. The value of Pearson's correlation is 0.61 at the 0.01 significance level, indicating that relationship is strong. The correlation coefficient for privacy and customer satisfaction is 0.37, meaning that privacy is causing 37% variation in customer satisfaction. It means that if the privacy factor in internet banking is increased by 100% the level of satisfaction will be increased only 35% that is not very high. That is why both of the variables have moderate positive correlation with each other.

The reason for this is that privacy is the major issue in banking industry. Customers' are reluctant to put their information on bank's web site. Organization must install some security standards on internet to have better results of privacy dimension.

#### **4.4 Linear regression analysis:**

Linear regression is used to specify the nature of relation between two variables. The main purpose of regression in this study is to analyze the impact of service quality dimensions on customer satisfaction. Linear regression is used to calculate that whether there is positive relationship between service quality dimensions i.e. efficiency, reliability, responsiveness and privacy on customer satisfaction or negative. Specifically enter method was used to calculate linear regression. Enter method means to enter all the variables at one time and then run the regression. Detailed analysis has been conducted using step wise approach.

Results of regression analysis are as follows;

#### 4.4.1 Model summary analysis:

**Table 3 Model summary**

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.928 <sup>a</sup>	.861	.857	.25611
a. Predictors: (Constant), PRIVACY, RESPONSIVENESS, EFFICIENCY, RELIABILITY				

Model summary part of output is very important in describing the standard error of estimate and goodness of fit (R square). This summary tells us that how strongly the multiple independent variables are related to dependent variable. The table shown above gives us the representation of variation among dependent and independent variables. Results have shown that 86% (the value of R square) variations in dependent variable i.e. customer satisfaction is caused by independent variables. It means that there exist a positive relationship between all independent variable and a dependent variable. Standard error of estimates tells us about the dispersion of actual values from the regression line. This model gives a low figure of standard error of estimate i.e. 0.26, meaning that actual data is only 26% dispersed from the regression line. Coefficient of each variable indicates that the change in dependent variable could be expected from the change in particular variable while keeping all the other variables constant.

#### 4.4.2 ANOVA table analysis:

**Table 4 ANOVA<sup>b</sup>**

ANOVA <sup>b</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	48.876	4	12.219	186.284	.000 <sup>a</sup>
	Residual	7.871	120	.066		
	Total	56.748	124			
a. Predictors: (Constant), PRIVACY, RESPONSIVENESS, EFFICIENCY, RELIABILITY						
b. Dependent Variable: CS						

ANOVA, the analysis of variance, is used for making simultaneous comparisons between two or more means. It also yields the values that can be tested to determine whether a significant relation exist between the variables or not.

ANOVA test is used to measure the significance level of study. In the above table sum of square of regression represents the overall experimental effect (the effect of service quality dimensions on customer satisfaction) whereas the mean square of the model represents the average experimental effect. Whereas, sum of square of residual shows that there are some unsystematic errors within data due to some natural incidence. Of all the information given in ANOVA table the major concern of the researcher is to focus on the value of "Sig."

column. This column indicates that how likely it is that F-value of that size would have occurred by chance; in this case the probability is 0.000 which shows that the chances occurrence are less than 0.1%. If the P-value given in this column is less than the critical value i.e. 0.01, set by researcher, than the effect is said to be more significant and the greater the value of P from critical value will give insignificant results. Above table has shown that our P-value is much less than 0.01, meaning that there is a significant impact between the variables. So we can say that there is strong impact of efficiency, reliability, responsiveness and privacy on customer satisfaction. The direction of relationship can be determined from the value of sum of square of regression which is 48.87 much larger as compared to sum of square of errors i.e. 7.871. It shows that there is a relationship exists between the variables.

#### 4.4.3 Régression Model:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5$$

Customer satisfaction = 0.342 + 0.215(Efficiency) + 0.406(Reliability) + 0.260 (Responsiveness) + 0.130 (Privacy)

**Table 5 Coefficients<sup>a</sup>**

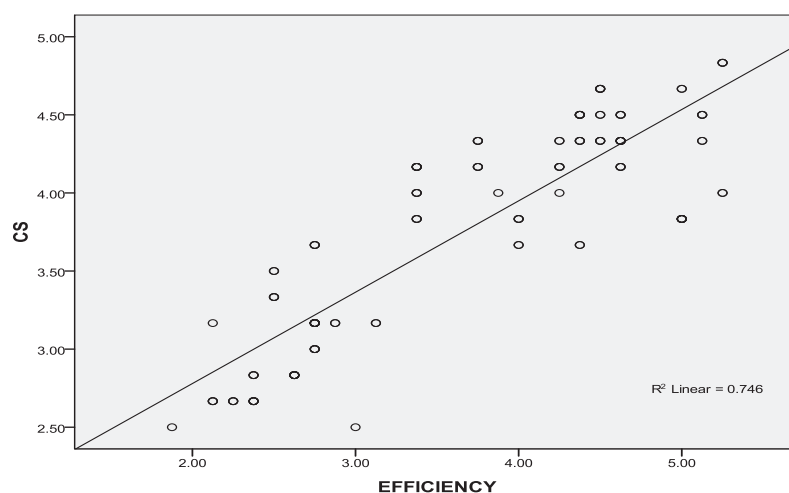
Coefficients <sup>a</sup>						
Model		Un-standardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.342	.248		1.381	.170
	EFFICIENCY	.146	.051	.215	2.858	.005
	RELIABILITY	.308	.076	.406	4.063	.000
	RESPONSIVENESS	.238	.074	.260	3.201	.002
	PRIVACY	.217	.069	.130	3.130	.002

a. Dependent Variable: CS

Data analysis of regression model involves one to one variable analysis. Detailed analysis of regression model is as follows;

##### 4.4.3.1 Efficiency and customer satisfaction:

Regression equation shows the impact of one variable on other variable. It shows that how the service quality dimensions show their impact on customer satisfaction. From the regression table it is shown that if the value of independent variable i.e. efficiency is increased by 1 unit than there would be an increase in dependent variable i.e. customer satisfaction by 0.215 units. This shows that there is a positive impact of efficiency on customer satisfaction, meaning that if the efficiency of internet banking across the banks increase 100% it would result in increase in customer satisfaction by 22%. The results are highly significant because the P-value in the table is 0.005 that is much less than the 0.01 (the significant level set by researcher). It is evident from the table that if the calculated value of P is greater than significant level than the researcher would have significant results.



**Figure 1 Regression line between efficiency and customer satisfaction**

Graph shown above also determine the impact between efficiency and customer satisfaction. The value of  $r^2$  in this case is 0.75 which depicts that there is a strong positive relationship between the two variables. The impact of independent variable on dependent variable is 75%, meaning that the variation caused by independent variable in dependent variable is 75% and the intensity of impact is very strong. This thing is also evident from the graph that the values are much dispersed.

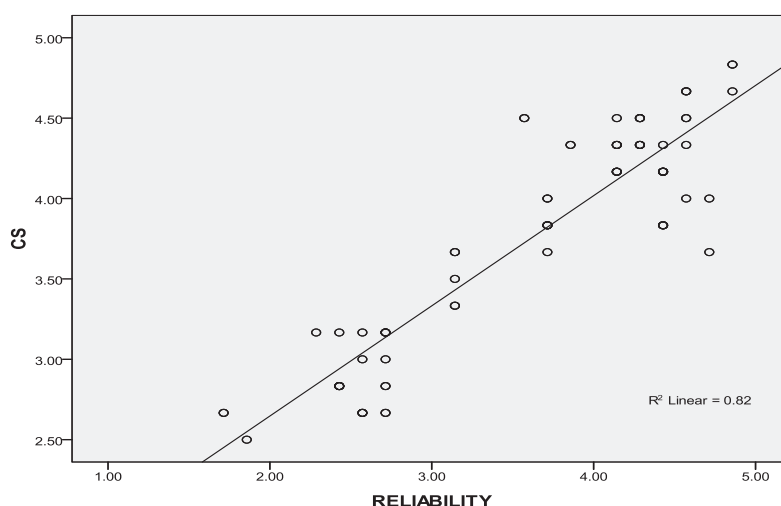
The reason of strong positive impact of efficiency on customer satisfaction is that customers' mostly rely on convenient and ease factor. The higher degree of responses shows that e-banking; which they are using, are efficient up to a higher level. Efficiency matters a lot in order to determine the success of the business, more the customers' are satisfied; more will be the worth of the organization. Organizations must give more attention to the efficiency of their system otherwise the organizations lose their credit worthiness.

#### **4.4.3.2 Reliability and customer satisfaction:**

Regression equation shows that there is a positive impact of reliability on customer satisfaction. This shows that if reliability of service quality is increasing by 1 unit then the customer satisfaction is going to increase by 0.406 units. The results are highly significant because more and more customers' preferred to use online banking system due to its promptness in providing relevant and accurate information.

Reliability of internet banking identifies that whether accurate and reliable information is provided to the customer or not. Here the analysis of survey indicates that customers' think that bank's site is a reliable source of providing required and relevant information. The effect of reliability is significant and its coefficient is positive indicating that greater the proportion of reliability, greater will be the customer satisfaction.





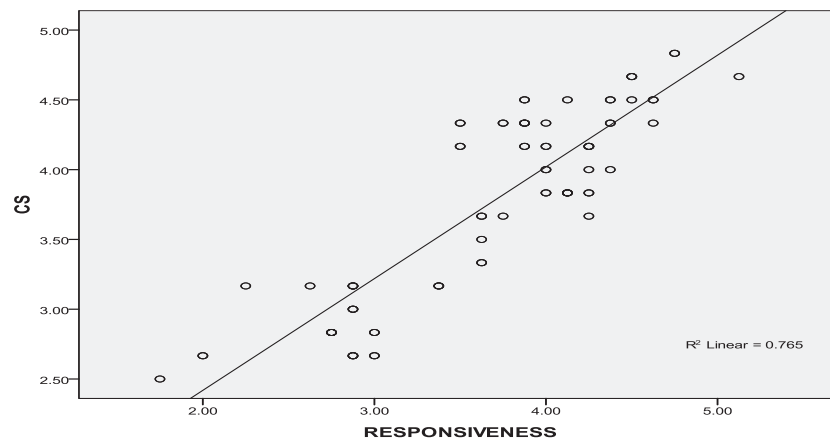
**Figure 2 Regression line between reliability and customer satisfaction**

Above graph has also shown the same results that reliability has positive impact on customer satisfaction as it is evident from the straight line moving upward. The value of  $r^2$  is 0.82 showing the magnitude of variation among the variables. Graph shows that 82% variation is caused by reliability in customer satisfaction. As it is evident from the graph that the observed values are very much dispersed from the predicted value and regression line showing the value of y with some error that's why the impact of independent variable on dependent variable is not high i.e. 0.406.

It is evident from correlation matrix and regression analysis that results of reliability and customer satisfaction are significant. The reason behind positive impact is that he updated information on bank's site provides accurate and relevant information to the customer at lower cost so that most of the customers' are adopting this system.

#### **4.4.3.3 Responsiveness and customer satisfaction:**

Regression equation is showing a positive impact of responsiveness on customer satisfaction. The intensity of impact is very low showing that responsiveness is having a positive impact on customer satisfaction but not up to a significant level. Researcher has summarized the regression equation as if the responsiveness of service quality is increased by 1 unit the customer satisfaction is going to be increased by 0.23 units. This positive impact shows that customers are satisfied by the customer representative service provided to resolve their conflicts. The p-value calculated for this variable is 0.002 which is very less than 0.01, meaning that results are statistically significant for responsiveness and customer satisfaction.



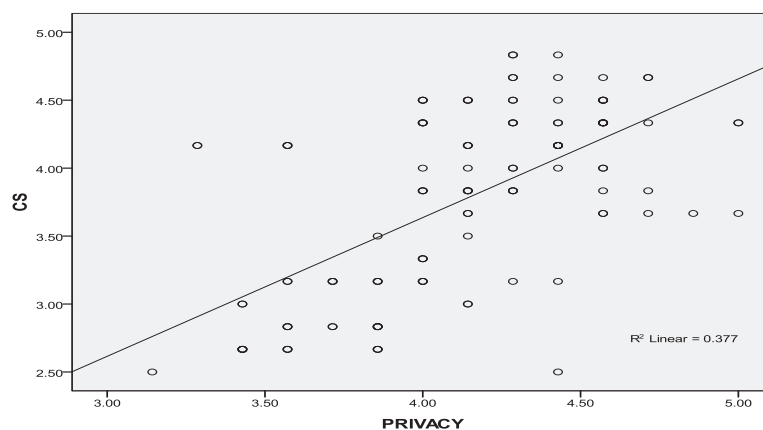
**Figure 3 Regression line between responsiveness and customer satisfaction**

The intensity of relationship between the two variables is determined from the graph. It is shown that the value of  $r^2$  is 0.0765 which shows that there is 77% variation caused by responsiveness in customer satisfaction. This positive relationship is estimated from the strong impact of responsiveness on customer satisfaction; the calculated value for this relationship 0.31 is showing that responsiveness is the variable that has positive relationship followed by positive impact on customer satisfaction but not up to the expectations of the banks.

The fact behind this result is evident from the literacy rate and awareness about the technology usage. Some of the customers' even do not know how to forward their problems on internet and how they will get their response back. In Pakistan still traditional banking system is preferred by the users. But organizations are now trying to make their system automated and create awareness among the customers to have a better understanding about internet banking.

#### 4.4.3.4 Privacy and customer satisfaction:

Privacy of personal information and security of credit card and account numbers in banking industry cause a significant impact on customer attitude towards adopting that particular service. Regression analysis has shown that there is a positive but very weak relationship between privacy and customer satisfaction i.e. 13%. It shows that with the increase in 1 unit of independent variable i.e. privacy, customer satisfaction is going to be increased by 0.13 units. The p-value calculates for this variable is 0.002 which is less than 0.01 the level of significance and indicates that results are statistically significant.



**Figure 4 Regression line between privacy and customer satisfaction**

It is evident from the graph that there exists a positive relationship between the two variables under study. Independent variable is causing 37% variations in dependent variable evident from the intensity of relationship between the two variables i.e. ( $r^2$ ). It is evident from regression equation that it the privacy that has a positive impact on customer satisfaction. Privacy matters a lot while choosing a bank for transactions and other monetary purposes. Shortly, greater the level of security provided to the customers, greater will be the level of satisfaction among the customers'. Further improvements are needed to increase the impact of privacy on customer satisfaction, as these results are not highly effective.

#### 4.5 Discussion of results:

The topic that the researcher has chosen for the research is to show the relationship between service quality criteria and customer satisfaction. The main purpose of choosing this topic is that e-banking is new in Pakistan. Not even a single research has been carried out in Pakistan. So the researcher has chosen e-banking for research purpose only on her own interest. Researcher has chosen the area of Islamabad Rawalpindi to carry out research. 130 respondents were given the questionnaires to be filled but only 125 filled questionnaires were used for data entry purpose. 5 point Likert scale is used in this research.

Researcher has done in-depth study of literature and identified many variables related to her study but the researcher has chosen only few variables to discuss in her study because she wants to see that e-banking is preferable in Pakistani context or not. But the results have shown that e-banking is preferable and frequently adopted by the customers' especially the business personals. Researcher has used a statistical tool SPSS to analyze her results.

Table 1 has shown the reliability test of the questionnaire. Reliability shows the consistence of responses in accordance with the particular variable. Researcher has done reliability test to check whether her questionnaire is reliable or not. The results are significant enough showing that the questionnaire used for this research is reliable.

Table 2 has shown the descriptive statistics, explaining the different features of the data. Mean and standard deviation is used to do descriptive analysis. Results have shown that dispersion of the data around the mean value is very less, showing the accuracy of data. It means that there are very small chances of outliers.

Table 3 has shown the results of correlation which shows that there is strongly positive correlation between all the independent variables and the dependent variable. McKinney et al. (2002) has said that reliability is about degree of accuracy, dependability and consistency of information. This has been proved by this research because of the strong relationship between the variables. Zeithaml et al. (2002) reliability, responsiveness and privacy are the quality criteria that fulfill the needs of the users in perspective of their satisfaction.

Table 4 explains the goodness of fit that how strongly the variables are related to each other. The results have shown that there is very strong relation exists between dependent and independent variables.

Table 5 explains the ANOVA table, showing that our data is significant or not. Results have shown that significant value for the ANOVA results are much less than the p-value set by the researcher. It also shows the direct relationship between the variables.

Table 6 explains the regression analysis done to check the impact of independent variables on dependent variables. Results have also shown that all the independent variables have positive impact on dependent variable. Research carried out by Ganguli and Rao (2010) also explain that the internet has also helped companies to improve services by providing easy access to customers' about their relevant interest. They also used different service quality dimensions in their study. The results computed by them have shown that there is positive impact on different service qualities on customer satisfaction and loyalty. So it is inferred that service quality is very crucial for explaining the satisfaction level of customers' regarding any e-service provided.

#### 4.6 Conclusion:

In today's era technology has made such advancements that every sector is in race to win over the other, banking sector is at the top of adopting it. It is evident from the research that the indicator variables used for service

quality has a very strong relationship followed by strong impact on customer satisfaction. It is shown that all the variables have positive relationship and impact on dependent variables.

The reason behind these strong results is that almost all the firms are adopting new technology to provide a competitive edge to the other organization. It is seen that banking industry is at the top to adopt the new technology to have a competitive advantage. E-banking is the outcome of e-commerce. E-banking provides a facility to the customers to avail all the services directly through internet. Just a single click on site makes them aware of all the information regarding the particular product or service they want to have. The main advantage that the banking industry has felt with the advent of e-banking is that their market share has increased just because of attraction and retention of new and potential customers' respectively.

Results of this research have shown that there is positive relationship and impact of service quality criteria on customer satisfaction. This is the indication of the fact that the hypotheses designed by the researcher to carry out this research have been proved.

It is also shown while conducting the research that there are some other intervening variables that are also effecting the customer satisfaction. Those intervening variables could be personalization, communication or technological update etc. So the results obtained from the research are significant but not up to higher level.

#### **4.7 Limitations of research:**

The limitations that the researcher faced while conducting the research is to find out the people who are relay having almost 2 to 3 years' experience of internet banking. Sometimes people are not willing to fill the questionnaire because of the shortage of time. They make excuses that we are busy; we cannot fill the form at this time. Kindly leave the form here and come some other day to pick up the form. When the researcher went to pick up the form they were still unfilled.

Researcher also faces a difficulty that the respondents show very careless attitude while filling the questionnaire. They check mark the options without even reading the questions. Researcher has discarded some questionnaires that seem to be useless.

#### **4.8 Implication for future research:**

With the development in e-commerce and e-banking, some of the areas that are not targeted in this research should be covered in this study. In addition to it, the shortcomings and limitations of this study also provide implication for future study.

Future study needs to verify the variables used in this study and also incorporate some new variables that happen to be significant in relation to customer satisfaction. Further research can also be carried on some other aspect i.e. collecting the view point of the organization especially the banking industry about service quality and their department regarding what they might identify as the service quality variables to satisfy the customers.

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