Measurement of Service Quality in Bangladesh mobile phone sector: Issues, Standards and Practices

by

Syeda Rownak Afza

A thesis submitted in fulfillment of the requirements for the award of the degree of Doctor of Philosophy

Supervisor: Prof. Dr. Mijanur Rahman

Department of Marketing
Faculty of Business Studies
University of Dhaka
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DEDICATION

To my loving and caring husband Rezoan, who constantly inspired and helped me to complete this thesis.

To my Mother, who always wanted to pursue her unfulfilled dreams through me.

ABSTRACT

Service quality is a very emerging issue in the area of marketing research at present. It is applicable to every sector and organizations profitability highly depend on this. In our country, Mobile telecommunication is playing a vital role to our economy. But, there were hardly any research addressing the issue of service quality in the mobile telecommunication sector particularly in our country. Although, there have been some research done in other countries, linking service quality and customers' satisfaction and continuance intention has neglected in most of the previous research. This study has tried to present an empirical investigation regarding service quality issues and practices in the Bangladesh mobile telecom area. This study also tried to make an association with service quality and customers' perceived value, satisfaction and their continuance intention. Also, an empirical study has been made to identify the net promotion score of the different mobile operators in Bangladesh, which the researcher believes as an unique contribution of this research.

To validate the study, this study used a quantitative-positivist approach as a research paradigm, cross-sectional design as a survey method for collective quantitative data, Key informant interview and Focus group for collecting qualitative data, convenience sampling as a sampling technique and mainly multivariate analysis (Exploratory Factor Analysis and Multiple regression analysis) as a data analysis technique. The findings of this study represents some particular service quality parameters that are used as benchmark to measure the service quality of the mobile operators in Bangladesh. A number of factors in service came up, which have a significant association with customers' perceived value, satisfaction and continuance intention. Most importantly, this study found that, even customers perceived service quality is low, they still want to continue the service of their mobile operators due to different switching barriers. Also, the Net Promotion Score of the different Mobile operators are significantly low, even in some cases it shows negative score, which may have a strong effect on the organizations profitability and growth.

Theoretically, the study extends service quality research by reframing the concept as a reflective, hierarchical model and framing its impact on satisfaction, continuance intentions in the developing country context like Bangladesh. Practically, for the practitioners and policy makers of various mobile telecom operators in Bangladesh, this study provides a conceptual service quality model for conducting integrated analysis and design of service delivery systems. Overall, in the mobile telecommunication service quality research in Bangladesh, this study makes a significant contribution by identifying the benchmarks and its association with customers' perceived value, satisfaction and continuance intention.

Key words: Service quality, Perceived value, Customer satisfaction, Continuance Intention, Net Promotion Score, Mobile telecommunication service, Bangladesh.

Acronyms:

QOS: Quality of Service

BTRC: Bangladesh Telecommunication Regulatory Commission

KPI: key performance indicator

CS KPI: Call Set-up Success Rate

PS KPI: Performance standards

SMS: Short message service

MMS:Multimedia message service

SDCCH: Standalone Dedicated Control Channel

GSM: Global System for Mobile Communication

GPRS: General Packet Radio System

CDMA: Code Division Multiple Access

TCH: Traffic Channel.

TBF: Telephone Band Filtering

PESQ: Perceptual Evaluation of Speech Quality

PV= Perceived Value

CS= Customers Satisfaction

CI= Continuance Intention

SERVQUAL= Service quality

SERVPERF= Servicer Performance

NPS= Net Promoter Score

BI= Behavioral Intention

EFA= Exploratory Factor Analysis

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ABSTRACT

1. Background of the study : The mobile telecommunication sector is a fast growing service sector in the world economy. In Bangladesh too, especially in urban areas it is large and touches the life of its public in many aspects of their daily lives. The blessings of this technology helps to develop every other service area of our country like education, healthcare, banking, restaurants , retailing, transportation, water supply and many other related areas that facilitate the evolution of a modern society. Telecommunication companies are advancing their technology tremendously. As a result, they face intense competition, including competition from sources that were not previously existing. The quality of these mobile telecommunication services needs to be constantly monitored and upgraded to maximize their positive impacts on individuals and society. Thus service quality measurement is very important as well as a challenge for the mobile telecommunication marketer or operator to stay ahead in terms of competition. It is the service excellence that differentiates them and sets them apart from the rivals. By pursuing service excellence they also continue to build and reinforce an intangible asset: Brand equity. Over time, and with the increased saturation of the market, companies have come to realize their performance can improve by focusing more on retaining customers than constantly acting in a conquest mode.

Within service marketing literature, service quality has received a great deal of attention from both academics and practitioners. Organizations operating in service industries should consider service quality a key strategic issue for business success. Since the last two decades, research in marketing has shown that customer behavioral intention can be explored from three attitudinal aspects: customer satisfaction, perceived value and switching barriers. The first stream is often called the ‘‘service quality -satisfaction- behavioral intentions’’ paradigm (Dabholkar et al. 2000). Comprehensively, the first two streams, customer satisfaction and perceived value, can help induce customers’ positive behavioral intentions and minimize customers’ attraction to other competitors.

However, companies can also encourage desirable consumer behavioral intentions by raising switching barriers so that customers are unlikely to change to an alternative provider. Furthermore, when switching barriers are high, customers find it difficult or costly to defect even if they are not very satisfied or when short-term fluctuations in service quality occur (Ranaweera and Prabhu 2003; Wathne et al. 2001).

Based on these motives, The researcher in this study has tried to identify the core customer service quality parameters that are used empirically in the context of Bangladesh & study their impact on customers' perceived value, satisfaction and their continuance intention. The reasons for choosing the mobile telecommunication market in Bangladesh for this study are as follows: ***First***, this is one of the most important service markets, but often neglected by most

of the previous studies. These services may not only have significant influences, but also have some tremendous operational effectiveness for communication in business. ***Second,*** over the last decade, the centralized telecommunication monopoly in Bangladesh has been changed and a relatively open and comparatively competitive market is gradually coming into being. As a result, many functional and fundamental changes have taken place in telecommunication reforms and more and more attention need to be paid to the improvement of customers' perceived service quality, customer value and customer satisfaction and the factors behind their continuance intention, in order to build superior competitive advantages by way of effective customer acquisition and retention with the increasingly intensified domestic operation. ***Third,*** Bangladesh Mobile telecommunication industry is one of the fastest growing service industry in the South Asia region, which may intend to compete with some other country's mobile telecommunication sector like India and China or in any other developing countries in near future. Therefore, such a study is very useful to determine what are the factors that create a link between service quality and customer satisfaction level and what are the main determinants of their continuance intention in the mobile telecommunication industry in Bangladesh.

2. Literature Review : A extensive amount of literature review has been conducted to explore the nature, characteristics, roles, opportunities and challenges of service quality theories particularly in IS in the context of developing countries like Bangladesh. A review of the literature found that studies in this area are largely subjective and lacks continuity. Recently, service quality has received a greater attention and identified as the major challenge for developing country context platform; however a very little study has practically conducted in this context, especially in the mobile telecommunication platform. This chapter has evidenced frequent research calls to explore the existing service quality theories from an interdisciplinary perspective in order to identify the relevant research gaps with regard to the components and consequences of service quality in the context of Bangladesh mobile telecommunication sector.

3. Objective /hypotheses of this study : Outcome of the Research will be beneficial to mobile service providers as well as the policy makers relevant with this area to understand service quality parameters from customer perception & satisfaction-continuation intention point of view. This may help to update the set benchmarks & so can improve the customers' satisfaction level. Therefore, *the main objectives* of this study is:

- To identify the link between service quality and consumer behavior in the telecommunication industry in Bangladesh (thus, determining consumers behavioral intention to the mobile telecommunication service providers in Bangladesh).

Specific objectives are:

- To identify those factors which creates customer satisfaction in the mobile telecommunication industry in Bangladesh and thus (if any) the new factors/variables can be added to determine the service quality and/or continuance intention of the mobile telecommunication users in Bangladesh.
- to measure the impact of overall service quality on customers' perceived value, satisfaction and continuance intentions in the context of Bangladesh.

Based on these objectives a conceptual model and six hypotheses has been developed, which aims to identify the link among service quality and customers' perceived value, satisfaction and their continuance intention in the Bangladesh mobile telecommunication industry. They are:

H1: Service quality positively influences mobile telecom customer's perceived value
H2 : Service quality has a positive impact on satisfaction on mobile telecom users.
H3 : Customer satisfaction positively impacts customers' perceived value.
H4 : Perceived value plays a significant role in continuance intention of the customers.
H4.1 : Perceived value plays a paradoxical role in switching behavior of the customers.
H5: Perceived Service quality has a positive impact on the continuance intentions of the mobile telecom users.(specifically in their switching behavior, loyalty and promoting tendency)
H6: Satisfaction has a positive impact on mobile telecom customer's overall continuance intentions.

All of these hypotheses were tested though chi-square. Based on the result and 95% significance level, all of these hypotheses became significant at p value <0.005. Thus, based on the findings, it is difficult to reject these hypotheses.

4. Methodology :

4.1 Sampling: For conducting this research, non -probability sampling method in the form of convenience technique was being selected to conduct the survey part of this study. And for the qualitative nature of data collection, Purposive Sampling in the form of Expert Sampling/Key Informant interview and Snowball sampling was used. In view of the above arguments and after reviewing the literature, the researcher has considered to use a sample size of 1200 mobile phone customers from the all mobile telecommunication company would be suitable and appropriate for this type of research. These 1200 user was equally divided from seven major divisions of Bangladesh. Out of that, 932 questionnaire turned to be complete and useful for this study. Also, the sampling method used in this research allows the researcher to use her subjective judgment in terms of a sampling plan. A detailed discussion has been made in chapter 5 regarding target population, sampling frame, unit, element and strategy.

4.2 Data collection and instrument: This research study is done primarily through a survey. Survey is referred as the best research method to understand public opinion regarding any issue. So this method can help to produce the precise result.

- To achieve the above-mentioned objectives & to prove these hypotheses, the study is done through Survey method.
- Questionnaires are filled by personally interviewing various customers ranging from students to corporate employees, housewives to business people.
- Interview technique is used to get the valid & reliable data.
- The questionnaire has used the likert scale questions divided into three main sections: section A presents data measuring customer usership, section B measuring overall service quality of the operators and customers attitude and behavior regarding their operators, Section C was designed to gain descriptive information associated with the respondent's demographic factors.

Qualitative Data was collected through focus group and expert interview. Two focus groups have been conducted consisting 7-8 people for each group. The group participants were selected based on the criteria of mobile phone uses for at least one year. For expert interview, service quality managers from various mobile operators in Bangladesh were interviewed through a semi-structured interview.

4.3 Data Analysis: Data were analyzed into three main part. First part was Descriptive statistics. The main objective of this part was to check the normality of data and some basic demographic details of the respondents that participated in this study. The next part was to conduct the chi-square (χ^2) test for testing the hypotheses that was developed in the conceptual model. The chi-square (χ^2) test is used to determine whether there is a significant difference between the expected frequencies and the observed frequencies in one or more categories. To test the significance, mainly Pearson chi-square test value was considered. The next part represents exploratory factor analysis. Exploratory factor analysis is a statistical approach that can be used to achieve two main results; data summarizing and data reduction Data summarizing aims to locate appropriate structure of the research variables under the specific logic factors. So, to identify the main contributing factor in service quality of mobile telecom operators and its linkage to customers' satisfaction and continuance intention exploratory factor analysis was used. The outcome of the factor analysis shows seven prime factors which are mainly responsible for service quality issue in our mobile telecom sectors. They are: customer care/help services, Network/VAS performances , call rate, Switching barrier, Brand Image/trust, Customer loyalty and continuance intention. Multiple regression analysis is the best way for assessing the quality of predictions of dependent variable with reference to independent variables. It gives the proportion of variance of dependent variable against

independent variables. In the overall regression analysis, higher regression coefficients (β) was reflected on the following service quality constructs. They are: Call rate/charge, Signal availability, call drop frequency, Voice quality, ease of access to customer care/ call center and time taken to resolve problem. Their detail has already been presented in the analysis and findings chapter.

5. Major Findings : Based on the above objectives and analysis, the major findings are presented below:

Firstly, factor analysis was used to identify the main contributing factors in measurement of service quality. Among all the factors in main three categories, that is: Interaction Quality, Physical environment Quality and Outcome/Network quality, constructs present in Interaction quality and outcome quality are adequately reflected. Based on the factor analysis result ***customer care/help services*** (interaction quality) and ***Network/VAS performances*** , ***call rate*** (Outcome quality) approached as principal component factor. The other prime factor came up in this research as ***Switching barrier, Brand Image/trust, Customer loyalty*** and ***continuance intention*** which create affect service quality of the mobile telephone service in our country.

Also, in the overall regression analysis, higher regression coefficients (β) was reflected on the following service quality constructs. They are: ***Call rate/charge, Signal availability, call drop frequency, Voice quality, ease of access to customer care/ call center and time taken to resolve problem***. Their detail has already been presented in the analysis and findings chapter. Which means that if this constructs contribution increases, service quality of the respective mobile operators will increase accordingly. All of their association with either customers perceived value or satisfaction or their continuance intention are positive except call drop, meaning, there is a negative relationship exist between call drop and service quality, which is also practically justified .

Among the regression model, Service quality emerged to have more influence on perceived value and customer satisfaction rather than direct impact on customer's continuance intention. The findings showed that customer's perceived value and satisfaction has more prominent influence on customers' continuance intention.

One thing the researcher in this study feels to mention that R2 or adjusted R2 value in multiple regression analysis was not that much high like .7 or .8 above. From many past studies , the researcher has found that, when there is a study happened concerning human behavior prediction or exploratory research those values may not be higher. Also. higher R2 value does not always mean that the true phenomenon has came up in the study. So, based on the originality and the context, the researcher has shown the exact phenomenon what came out as result.

Secondly, Chi square was initially used to test the significance level of the hypotheses that were presented in the conceptual model. All of the hypotheses were accepted at $p<0.05$ significance level.

Finally, which was the unique contributing part in this research that is to identify the link with service quality and net promotion score for the mobile telecom operators in Bangladesh. For that purpose, respondents were asked to rate their score based on their service quality and satisfaction regarding their respective operators. The result already has been discussed in chapter 6. The summary is though according to market share Grameen phone is the largest operator in our country, their NPS is only 0.2%. The second highest NPS stand for ROBI(0.18%) . Banglalink (-0.23%) and Airtel (-0.45%) NPS are negative. Citycell(0.09%) and Teletalk(0.03%) NPS is not that significant. But, apparently, all of these operators are close to each other in terms of their product offerings and competition. If they really want to retain their customers and make more profit from them, there is no alternative but to offer them an excellent service.

6. Thesis Structure:

This thesis comprises six chapters, appendices and references.

Chapter 1: Summary of the thesis provides a rationale of the research. It outlines the key research into service quality and the extension of service quality level for the mobile telecommunication industry and how its related to customer satisfaction level. This chapter also discusses the gap in literature, and how this is applied specifically in Bangladesh is addressed in this study objective.

Chapter 2: This chapter is mainly concerned about the detailed service quality measurement literature primarily from the marketing discipline and its application in business strategy formulation, especially in mobile telecommunication sector both in from global and local perspective. Also, it tried to establish a link among the different constructs of service quality, perceived value, customer satisfaction and continuance intention (mainly on switching behavior, loyalty and promoting tendency). Different approaches to quality measurement and its importance to behavioral output, particularly in mobile telecommunication has also been discussed in this chapter.

Chapter 3: This chapter presents a detailed overview of the mobile telecommunicationindustry in our country. This chapter also presents some key facts and figures related to this and identifies the roles and challenges of regulatory authorities for mobile telecom industries. Another important contribution of this chapter was to identify the key measures of different service quality parameters that have been used as benchmarks for measuring the service quality by various operators in Bangladesh.

Chapter4: This chapter will mainly discuss the conceptual model which has been developed for this study. The context and explanation of different constructs, and thus the hypothesis development is also the subject matter of this chapter.

Chapter5: This chapter details about the methodology that has been used for this study. This chapter discusses the detailed outline about the mix methodology which has been used for this study. ***First study*** was the exploratory study using in-depth interviews, focus group and KII to develop understanding of the attributes and dimensions used for the service quality level measurement for the mobile telecom sector in Bangladesh. ***Second study*** was also explanatory in nature as it takes the dimension identified in study 1 and seeks to confirm these through quantitative research and analysis. This chapter also discusses the research paradigm, Instrument development and validation process that is questionnaire development, sample size determination, selection, data collection process and data analysis technique that have been used in this study.

Chapter 6: Data analysis and results found from the field is the main content of this chapter. This chapter is mainly divided in three sections. The ***first section*** was for descriptive studies and checking the validity of the data in general. Chi-Square was also used to test the conceptual model and test the hypotheses that has been developed in particular at the primary level. The ***second section*** was for exploratory factor analysis. Here, the significant factor was identified as a part of the contributing factor for service quality and behavioral outcome. Also, this technique confirmed the validity of the study by checking the cronbach's alpha and other parameters. The ***third section*** uses the multiple regression technique for predicting the unknown value of the variables identified in the study from the known value of two or more predictors. This has also helped to answer the question about whether the independent variables individually influence the dependent variable significantly.

Chapter 7: This chapter presents the conclusion of the thesis by summarizing the key findings of the study, discussing its theoretical contributions and managerial implications, examining the limitations of the research and making recommendations for further research. Based on the findings of this study, conclusion and some recommendation have been made for the mobile telecommunication operators in Bangladesh for the strategy formulation and development of their service level to a global standard.

7. Direction: This study provides a detailed outline regarding the service quality issues and practices that exists in Bangladesh. This study has contributed in both academic and practical field of investigation with the subject matter. Combining the NPS (net promotion score) with the linkage of customer satisfaction and service quality is a unique combination of this study. More detailed discussions have been made in the last chapter of this study regarding the future research scope, targeted to both academician and practitioners, who are interested to research into this area.

8. Limitation : This study is not free from limitations. Firstly, the research was conducted within the specific domain of mobile telecom service in a specific country. As a result, the applicability of findings more broadly or to other specific forms of these types of service in a new setting is uncertain. Secondly, this research was mainly based on only cross-sectional studies, so the study contains typical limitations associated with this kind of research methodology. Thirdly, the sample only represents consumers from a developing country (i.e., Bangladesh), thereby there is a limitation regarding the generalizability of findings to other consumers in developed countries. And finally, the researcher had some limitations to both time and cost for conducting this research , as a result the researcher feels that this study may have some lacking in terms of adding more value into this field.

9. Conclusion : To meet the customer perception & customer expectation this research findings will provide some base to raise the customer satisfaction level by understanding the impact of basic service parameters. Service providers have to put-up extra efforts to raise the satisfaction level of users. Also, understand the reason for low net promotion score and investigate more on this issue will give the organizations a better profit opportunity and areas of improvement.

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Chapter 1

Introduction

"We can do anything we want as long as we stick to it long enough."

- Helen Keller

1.1 Overview (Rationale, Context and Objectives):

The mobile telecommunication sector is a fast growing service sector in the world economy. In Bangladesh too, especially in urban areas it is large and touches the life of its public in many aspects of their daily lives. The blessings of this technology helps to develop every other service area of our country like education, healthcare, banking, restaurants , retailing, transportation, water supply and many other related areas that facilitate the evolution of a modern society. Telecommunication companies are advancing their technology tremendously. As a result, they face intense competition, including competition from sources that were not previously existing. The quality of these mobile telecommunication services needs to be constantly monitored and upgraded to maximize their positive impacts on individuals and society. Thus service quality measurement is very important as well as a challenge for the mobile telecommunication marketer or operator to stay ahead in terms of competition. It is the service excellence that differentiates them and sets them apart from the rivals. By pursuing service excellence they also continue to build and reinforce an intangible asset: Brand equity. Over time, and with the increased saturation of the market, companies have come to realize their performance can improve by focusing more on retaining customers than constantly acting in a conquest mode.

Within service marketing literature, service quality has received a great deal of attention from both academics and practitioners. Organizations operating in service industries should consider service quality a key strategic issue for business success (Lewis and Mitchell, 1990; Spathis, Petridou and Glaveli, 2004). Those service providers who establish a high level of service quality retain a high level of customer satisfaction they obtain a sustainable competitive advantage (Lewis and Mitchell, 1990; Meuter et al., 2000; Guo, Duff and Hair, 2008). Research indicates that companies with an excellent customer service record reported a 72% increase in profit per employee, compared to similar organizations that have demonstrated poor customer service; it is also five times costlier to attract new customers than to retain existing customers (Cook, 2004). Therefore, achieving high levels of service is one method to keep customers both satisfied and loyal.

Since the last two decades, research in marketing has shown that customer behavioral intention can be explored from three attitudinal aspects: customer satisfaction, perceived value and switching barriers. The first stream is often called the ‘‘service quality -satisfaction-behavioral intentions’’ paradigm (Lapierre et al. 1999; Dabholkar et al. 2000). Previous studies suggest that customers’ positive behavioral intentions come from their satisfaction, while satisfaction is the result of good service quality. Specifically, satisfaction is a strong mediator of the effect of service quality on behavioral intentions (Dabholkar et al. 2000). However, this research stream primarily discusses consumer behavioral intentions from the benefit aspect.

Thus, researchers have also proposed the concept of perceived value, which simultaneously combines the benefit and cost aspects to explain customer behavioral intentions (Monroe 1991; Zeithaml 1988). In general, perceived benefits have most often been operationalized in terms of service quality (Jen and Hu 2003; Lapierre et al. 1999; Zeithaml 1988), and perceived costs have been divided into monetary prices and nonmonetary prices (Choi et al. 2004; Wang et al. 2004). Existing literature also provides significant empirical evidence in support of the positive relation between service quality and perceived value, while the relation between perceived costs and perceived value is negative (Choi et al. 2004; Cronin et al. 2000; Jen and Hu 2003; Lapierre et al. 1999; Liu et al. 2005; Wang et al. 2004). Moreover, researchers show that perceived value is not only an important antecedent of behavioral intentions, but also a new paradigm that offers a more comprehensive approach than a simple focus on service quality or satisfaction (Ruiz et al. 2008). Comprehensively, the first two streams, customer satisfaction and perceived value, can help induce customers’ positive behavioral intentions and minimize customers’ attraction to other competitors.

However, companies can also encourage desirable consumer behavioral intentions by raising switching barriers so that customers are unlikely to change to an alternative provider.

Research suggests that with the exception of customer satisfaction and service quality, switching barriers also play an important role in explaining customer behavioral intentions (Burnham et al. 2003; Huang et al. 2007; Jones et al. 2000; Liu et al. 2005; Yim et al. 2007). Furthermore, when switching barriers are high, customers find it difficult or costly to defect even if they are not very satisfied or when short-term fluctuations in service quality occur (Ranaweera and Prabhu 2003; Wathne et al. 2001).

The construct of switching barrier is a crucial factor in framing consumers’ value perception and in loyalty or promoting the said services. The present scenario of Bangladesh Mobile telecom industry is not that different. Empirical investigation in this research has also wanted to see this phenomenon and tried to create a link among these constructs. If there are some barriers in switching, customers may face some difficulties to change the service, by making some compromises with their dissatisfaction. In general, people link switching with

dissatisfaction, but there may also be some cases, where people would generally continue their services, even if they are not satisfied or have perceived positive value for their service.

The role of consumers in evaluating the nature of quality becomes a critical competitive consideration due to its enormous impact on outcome constructs (Chiou et al. 2006; Donabedian 1992; Jun et al. 1998; O'Connor et al. 2000). As such, perceived service quality and its association with satisfaction and continuance intentions becomes a critical dimension to determine the success or failure of the service system (Dagger et al. 2007; Dagger & Sweeney 2006).

This study defines service quality (SQ) as consumers' judgment about the overall excellence or superiority of the service (Zeithaml 1987). The role of consumers in evaluating the nature of quality becomes a critical competitive consideration due to its enormous impact on outcome constructs (Chiou et al. 2006; Donabedian 1992; Jun et al. 1998; O'Connor et al. 2000). As such, perceived service quality and its association with satisfaction, continuance intentions and quality of health life becomes a critical dimension to determine the success or failure of the mHealth service system (Dagger et al. 2007; Dagger & Sweeney 2006). However, research using models to analyze these relationships is scant in this domain (Ostrom et al. 2010). A review of the literature reveals that most of the research in this domain (i.e., mHealth) still remains largely anecdotal, fragmented and a theoretical (Chatterjee et al. 2009; Kahn et al. 2010; Akter 2010) . Therefore, ***the main objective*** of this study is to identify the link between service quality and consumer behavior in the telecommunication industry in Bangladesh (thus, determining consumers behavioral intention to the mobile telecommunication service providers in Bangladesh). The specific objectives are: **firstly**, to identify those factors which creates customer satisfaction in the mobile telecommunication industry in Bangladesh and thus (if any) the new factors/variables can be added to determine the service quality and/or continuance intention of the mobile telecommunication users in Bangladesh. ***Secondly,*** to measure the impact of overall service quality on customers' perceived value, satisfaction and continuance intentions in the context of Bangladesh.

1.2 Research Questions:

Some major research question for this study includes:

- RQ1: What are the dimensions used to evaluate the service quality level in mobile telecom industry?
- RQ2: How are these dimensions used in service quality measurement level?
- RQ3: What are the particular components that actually create the link between service quality and customer satisfaction?

1.3 Research Methodology:

This study specifies that the nature of the theory is 'explaining and predicting' (Gregor 2006), the research philosophy is 'quantitative-positivist' (Straub et al. 2004), the research method is 'field study' (Jenkins 1985), the data collection technique is 'cross-sectional survey' Pinsonneault & Kramer 1993), the sampling strategy is 'convenience sampling' (Shu Xin 2010) and the data analysis technique is 'exploratory factor analysis' and 'multiple regression analysis' for the main study. The study established rigor in the research design by supporting the application of each of these techniques using necessary logic and support from the literature.

1.4 Research Paradigm:

This study reflects the *positivist* approach by formulating an empirically testable theory to establish 'law like generalizations' (Orlikowski & Baroudi 1991), such as, overall service quality in mobile telecommunication consists of three primary dimensions and they have a significant impact on customers' perceived value, satisfaction and continuance intentions.

Since this study is going to measure a causal network of relationships in service quality, a field study was conducted using cross-sectional survey design. This study confirms such research as a "proxy view" to capture the critical aspects of service systems through some surrogate measures (e.g., quantitative variables). It posits that perceptual, cognitive and attitudinal responses to service systems are the critical variables in explaining and predicting technology and its effects on the world (Orlikowski & Iacono 2001).

1.5 Sampling:

Data were collected from Bangladesh, from all seven divisions through an extensive survey from October to July 2012. The study used non- probability, convenience sampling method to collect data from all the divisions in Bangladesh. Areas from the mentioned were selected in such a manner that different socio-economic groups were represented. A total of 1200 surveys were attempted for the study, of which 932 surveys were completed during the period. For expert opinion, the service quality managers of different mobile telecom companies were interviewed following a semi-structured questionnaire. The demographic profile of the respondents who participated in survey represents unbiased, expert users and a diverse cross-section of the population.

1.6 Data Analysis:

Data analysis proceeded in three steps; data preparation, data analysis and reporting. Computer statistical packages (SPSS 20) were used in undertaking four types of statistical analysis; descriptive analysis, chi-square analysis, exploratory factor analysis and multiple regression analysis. The background information in the questionnaire was subjected to descriptive statistical analysis to provide a profile of the respondents. Using cross tabulation,

correlation analysis and Chi square test of independence of association, the study sought to establish the existence of significant association between respondent profile, service quality variables and its relationship to customers' perceived value and their continuance intention.

1.7 Justification of this research:

Services are deeds, process & performances. (Zeithmal and Bitner, 2006) Broadly, service includes all economic activities whose output is not a physical product or construction is generally consumed at the time it is produced and provides added values in forms (conveniences, amusement, timeliness, comfort or health) that are essentially intangible concerns for its first purchaser (Quinn et al, 1987). The service sector consists of different dimensions and among them Telecommunication sector is playing a vital role in any country's economy and development by providing the facilities of communication and employment generation.

Influence and unprecedented growth in the foreign investment in the economies of South Asia and Pacific region are growing with rapid pace. Telecommunication sector of these areas are have an enormous scope for employment generation, creating new business opportunity and a rapid improvement in communication. Bangladesh is not an exception in this case. Mobile telecommunication has revolutionized the process of communication between individuals, particularly in countries like Bangladesh. Mobile telecommunication helps business people, general people to have constant communication and it helps tremendously to receive and pass information. In our country, Mobile telecommunication is playing a vital role in terms of ICT4D (ICT for development) and women's empowerment. If we see the growth rate of the mobile telecommunication sector in Bangladesh, we can observe the rate of expansion and its increasing popularity and acceptance. The Bangladeshi mobile industry acquired more than six million subscribers between March 1997 and June 2005, who are mainly middle and high-income citizens. (Source: New Horizons; vol;1,2006) The recent growth of the mobile telecommunication sectors depicts it more clearly. As per BTRC (Bangladesh Telecommunication Regulatory commission) the total number of mobile phone subscribers has reached 34.37 million at the end of December 2007. The Mobile Phone tele-density has increased 23.23% (www.btrc.gov.bd). This overall growth statistics gives a picture of Bangladesh as one of the largest growing markets for mobile telecommunication sector. The more this industry grows, the more it is becoming challengeable for the Mobile operators. Because as it grows, it is becoming competitive and search for profits has called for more attention towards customer satisfaction. Specifically, Mobile operators should provide good network coverage and offer a competitive price to retain their customers. In fact providing an overall good service delivery is also a very crucial factor for the mobile telecommunication

service operator in Bangladesh. Thus, assessing service quality dimensions is very important to understand the overall customer satisfaction in this area.

By any measure, the future for mobile subscriber growth or the overall market growth in Bangladesh appears to be very strong. On the other hand, the various mobile telecommunications operators are also conducting a strong visible war in marketing communication to reach their marketing objectives as well as profit. For this, they have introduced lower call –rate, better network, other value –added services like internet facilities in cell phones, SMS, MMS, different content service options, international roaming etc. All of these activities are a part of their marketing strategy to win over the market share and by this they want to satisfy their customer. It may be worthwhile to explore the various factors in the service sector of mobile telecommunication in which satisfaction may influence the marketing mix and other marketing strategy to gain the desired profit from the market. The reasons for choosing the mobile telecommunication market in Bangladesh for this study are as follows. *First*, this is one of the most important service markets, but often neglected by most of the previous studies. These services may not only have significant influences, but also have some tremendous operational effectiveness for communication in business. *Second*, over the last decade, the centralized telecommunication monopoly in Bangladesh has been changed and a relatively open and comparatively competitive market is gradually coming into being. As a result, many functional and fundamental changes have taken place in telecommunication reforms and more and more attention need to be paid to the improvement of customers' perceived service quality, customer value and customer satisfaction and the factors behind their continuance intention, in order to build superior competitive advantages by way of effective customer acquisition and retention with the increasingly intensified domestic operation. *Third,* Bangladesh Mobile telecommunication industry is one of the fastest growing service industry in the South Asia region, which may intend to compete with some other country's mobile telecommunication sector like India and China or in any other developing countries in near future. Therefore, such a study is very useful to determine what are the factors that create a link between service quality and customer satisfaction level and what are the main determinants of their continuance intention in the mobile telecommunication industry in Bangladesh.

1.8 Contribution of this research:

1.8.1 Contribution to theory:

This research has mainly tried to investigate the relationship of service provided by the telecom operators and customers' perceived value and their satisfaction level . Also, the subject matter tried to identify (if) any link exists among service quality, customers' perceived value,

satisfaction and their continuance intention. In addition, it adds novelty to theory. By modeling the association between service quality and continuance intentions three new constructs were examined (i.e. Switching behavior, loyalty and net promoting tendency). As knowledge to the researcher till date, there was no work done investigating these constructs in relation to the service quality and continuance intention in the context of the developing countries, specifically in Bangladesh. Furthermore, the newness of the theory lies in its application in a new research setting (developing country) based on the logical evidence of user-perceived quality (Whetten 1989). Thus, the study believes that the proposed theoretical framework makes a significant contribution to knowledge as most of its constructs and their relationships have not been the subject of prior theorizing in the context of mobile telecom study in Bangladesh.

1.8.2 Contribution to Practice:

The implications of this research are highly relevant to different service providers, like telecom, health care, banking and insurance, management and society in general. The findings suggest that users generally evaluate the service quality of their respective mobile telecom operator at an overall level and three main dimensional levels, (i.e. Interaction Quality, Physical environment quality, and Outcome quality). For providers of different telecom services in our country, this finding may improve their understanding of how customers evaluate their overall service quality. In particular, the findings suggest that operators should focus on improving the quality of the services they provide based on the three primary dimensions, and how their customer perceive the value and how it reflects on their satisfaction and continuance intention. The findings support the importance of overall service quality (SQ) as a significant decision-making variable in predicting individual outcome (i.e., perceived value, satisfaction, and economic outcome (i.e. Switching behavior, loyalty and promoting tendency). Thus, the researcher believes that this study will help the decision makers and strategy planners of various operators in our country make their strategy related to their service quality and customers satisfaction.

1.8.3 Research Limitations

This study is not free from limitations. Firstly, the research was conducted within the specific domain of mobile telecom a service in a specific country. As a result, the applicability of findings more broadly or to other specific forms of these types of service in a new setting is uncertain. Secondly, this research was mainly based on only cross-sectional studies, so the study contains typical limitations associated with this kind of research methodology. Thirdly, the sample only represents consumers from a developing country (i.e., Bangladesh), thereby there is a limitation regarding the generalizability of findings to other consumers in developed countries. And

finally, the researcher had some limitations of both time and cost for conducting this research , as a result the researcher feels that this study may have some lacking in terms of adding more value to this field.

1.9 Thesis Structure:

This thesis comprises six chapters, appendices and bibliography.

Chapter 1: Summary of the thesis provides a rationale of the research. It outlines the key research into service quality and the extension of service quality level for the mobile telecommunication industry and how its related to customer satisfaction level. This chapter also discusses the gap in literature, and how this is applied specifically in Bangladesh is addressed in this study objective.

Chapter 2: This chapter is mainly concerned about the detailed service quality measurement literature primarily from the marketing discipline and its application in business strategy formulation, especially in mobile telecommunication sector both in from global and local perspective. Also, it tried to establish a link among the different constructs of service quality, perceived value, customer satisfaction and continuance intention (mainly on switching behavior, loyalty and promoting tendency). Different approaches to quality measurement and its importance to behavioral output, particularly in mobile telecommunication has also been discussed in this chapter.

Chapter 3: This chapter presents a detailed overview of the mobile telecommunication industry in our country. This chapter also presents some key facts and figures related to this and identifies the roles and challenges of regulatory authorities for mobile telecom industries. Another important contribution of this chapter was to identify the key measures of different service quality parameters that have been used as benchmarks for measuring the service quality by various operators in Bangladesh.

Chapter4: This chapter will mainly discuss the conceptual model which has been developed for this study. The context and explanation of different constructs, and thus the hypothesis development is also the subject matter of this chapter.

Chapter5: This chapter details about the methodology that has been used for this study. This chapter discusses the detailed outline about the mix methodology which has been used for this study. ***First study*** was the exploratory study using in-depth interviews, focus group and KII to develop understanding of the attributes and dimensions used for the service quality level measurement for the mobile telecom sector in Bangladesh. ***Second study*** was also explanatory in nature as it takes the dimension identified in study 1 and seeks to confirm

these through quantitative research and analysis. This chapter also discusses the research paradigm, Instrument development and validation process that is questionnaire development, sample size determination, selection, data collection process and data analysis technique that have been used in this study.

Chapter 6: Data analysis and results found from the field is the main content of this chapter. This chapter is mainly divided in three sections. The ***first section*** was for descriptive studies and checking the validity of the data in general. Chi-Square was also used to test the conceptual model and test the hypotheses that has been developed in particular at the primary level. The ***second section*** was for exploratory factor analysis. Here, the significant factor was identified as a part of the contributing factor for service quality and behavioral outcome. Also, this technique confirmed the validity of the study by checking the cronbach's alpha and other parameters. The ***third section*** uses the multiple regression technique for predicting the unknown value of the variables identified in the study from the known value of two or more predictors. This has also helped to answer the question about whether the independent variables individually influence the dependent variable significantly.

Chapter 7: This chapter presents the conclusion of the thesis by summarizing the key findings of the study, discussing its theoretical contributions and managerial implications, examining the limitations of the research and making recommendations for further research. Based on the findings of this study, conclusion and some recommendation have been made for the mobile telecommunication operators in Bangladesh for the strategy formulation and development of their service level to a global standard.

1.10 Research Limitations:

This study is not free from limitations. Firstly, the research was conducted within the specific domain of mobile telecom service in a specific country. As a result, the applicability of findings more broadly or to other specific forms of these types of service in a new setting is uncertain. Secondly, this research was mainly based on only cross-sectional studies, so the study contains typical limitations associated with this kind of research methodology. Thirdly, the sample only represents consumers from a developing country (i.e., Bangladesh), thereby there is a limitation regarding the generalizability of findings to other consumers in developed countries. And finally, the researcher had some limitations to both time and cost for conducting this research , as a result the researcher feels that this study may have some lacking in terms of adding more value into this field.

A brief overview of the remaining chapters of this dissertation is depicted in Table 1.1 and discussed in the following sections:

Table 1.1: Thesis Chapters Outline

Chapter One: Introduction	• Problem definition, rationale and objectives • Research questions • Scope and theory • Methodology and contribution • Structure of the thesis
Chapter Two: Literature Review(Context)	• Overview • Definition of service and characteristics • Conceptualization of service quality • The nature and characteristics of service quality in the mobile telecom industry
Chapter Two : Literature Review(Theory)	• Generic service quality theory • Service quality in information systems • Relationship among service quality, satisfaction, continuance intentions
Chapter Three: An overview of the Mobile telecom sector in Bangladesh	• Overview • Key challenges and opportunities • Discussions and conclusion
Chapter Four: Conceptual model and Hypothesis Development.	• Discussion of conceptual model • Discussion of key constructs • Discussion of hypotheses
Chapter Five: Research Methodology	• Research paradigm • Instrument development and validation process • Sampling plan • Data analysis technique
Chapter Six: Analysis and Results	• Construct and measurement • Reliability and validity • Tests of hypotheses • Overall findings
Chapter Seven: Discussions and Conclusions	• Discussion of results • Theoretical contribution • Managerial implications • Limitations • Future research directions • Conclusions

1.11 Chapter Summary

In summary, this chapter of the study has provided the background and overview of this thesis. The background information explicitly specifies the research gap in the literature. The research problem, research question and objective and justification of the study clearly signify the importance of this research. This chapter also provides an outline of the investigation including the research framework, methodological approach and areas of contributions. Given the framework of this thesis, the following chapter contains a comprehensive discussion of the relevant theories which emerged from a detailed review of the literature focusing on specific importer perspectives.

Chapter 2

Literature Review (Context)

2.1 Overview:

This chapter provides a general understanding of Service Quality and its context, exploring the nature and characteristics of Service Quality, Service Quality measurement parameters focusing on the mobile telecom operators in the market of Bangladesh, the primary dimension of mobile communication service quality and its platform channels. This study also addresses the gaps of measuring service quality in the region of developing country context, thus ignoring the economic cost and profitability of the mobile companies. For this, Service Quality appears to be the most formidable challenge for all of the mobile telecom companies in Bangladesh, especially where the mobile telecom sector lies in a very closed and competitive market. Thus, the literature review covers both the contextual application of service quality in mobile telecom sectors (Chapter 2) and service quality-related theoretical explorations (Chapter 3).

This chapter is designed as follows: (Section 2.2) discusses an overview of service in terms of service definition, service characteristics and service categories. The next (section 2.3) outlines the nature and characteristics of service and the nature and characteristics of mobile telecom service quality and its parameters (section 2.4). These discussion lead to the following sections: Service quality challenges of mobile telecom operators in Bangladesh (Section 2.5) and overall research gaps: Mobile telecom service quality in developing country context (section 2.6).

2.2 Definition of Service :

2.2.1 Defining Service

Services are part and parcel of our lives. Shostack (1977) views services as essentially intangible activities which fulfill certain wants. Many scholars (e.g., Bateson 1979; Kotler & Bloom 1984; Zeithaml et al. 1985) have supported this logic and based their service definition on 'intangibility'. Berry (1980, p. 24) defines a service as "a deed, a performance, an effort … and when a service is purchased, there is generally nothing tangible to show for it." This definition is very consistent with Kotler and Bloom's (1984) definition which also identifies a service as an activity or benefit under an exchange process that is based on intangibility and no ownership. Gronroos (1988, p. 10) in his initial definition proposes that "a service is not a thing but a series of activities or process, which moreover are produced and consumed simultaneously at least to some extent …" (p. 10). Recently, Gronroos (2000, p. 46) redefines services as "processes thatconsist of a set of activities which take place in interactions between a customer and people, goods and other physical resources, systems and/or infrastructures representing the service provider and possibly involving other customers, which aim at solving customers'

problems". Acknowledging the process viewpoint of service, Zeithaml et al. (1996) introduced perceived value orientation in services by identifying them as "deeds, processes or performances". Overall, Lovelock et al. (2001) proposed services as process-based economic activities that provide place, form, time, problem solving or experiential benefits to the user. In the same spirit, Fitzsimmons and Fitzsimmons (2006) define service as "a time-perishable, intangible experience performed for a customer acting in the role of a co-producer". Rai and Sambamurthy (2006) echo the same concept by defining service as "a simultaneous or near-simultaneous exchange of production and consumption, transformation in the experience and value that customers receive from engagement with providers, and intangibility in that goods are not exchanged". Sampson and Froehle (2006) also focus on the co-production and identify that "the customer provides significant inputs into the production process." Overall, Kotler and Keller (2006) synthesize service as "any act or performance that one party can offer to another party that is essentially intangible and does not result in the ownership of anything". They identify service as an economic activity which provides benefits to a customer by bringing a desired change in his or her status at a specific time and place.

However, Vargo and Lusch (2004) further update the extant notions by focusing on value rather than utility and defining service simply as "the application of specialized competences (knowledge and skills) through deeds, processes, and performances for the benefit of another entity or the entity itself." More precisely, they identify a ''service'' as the application of resources for the benefit of another (Vargo & Lusch 2006). Supporting such a dictionary-like definition of a service, Alter (2008) states that "services are acts performed for others, including the provision of resources that others will use." In the same spirit, IBM Research (2009) provides a simple definition of a service by defining it as "a provider-client interaction that creates and captures value." Early scholars emphasized the concept of 'intangibility' in defining services; however, present scholars identify a service as the application of 'resources' under a 'process' for the benefit of others. Overall, this study adopts the simplistic and unifying viewpoints of Vargo and Lusch (2004) and Alter (2008) which define service as a process to provide benefits to others using resources (e.g., skills, competences or better platforms).

Table 2.1 Service characteristics and their implications in service research (Adapted from Akhter,2012)

Service Characteristics	Challenges	Implications	References
Intangibility Service cannot be tasted, smelled, touched or seen.	Difficult to provide concrete evidence; difficult to evaluate service quality; risk and uncertainty in visualizing service benefits.	Ensuring service benefits; documenting performance; offering guarantee.	Berry (1980); Lovelock et al. (2011); Shostack (1977); Zeithaml (1985); Zeithaml & Bitner (2009).
Inseparability Services are produced and consumed simultaneously.	Limited production capacity; difficult to ensure consistency in provider's equipment, facility or overall systems.	Ensuring quality of interaction to ensure service benefits.	Berry (1980); Lovelock et al. (2011); Zeithaml (1985); Zeithaml & Bitner (2009).
Variability Services vary as per contexts	Difficult to ensure consistency, reliability and service quality or harder to protect customers from service failures.	Determining quality standards to prevent service failures; implementing good service recovery procedures.	Berry (1980); Lovelock et al. (2011); Zeithaml (1985); Zeithaml & Bitner (2009).
Perishability Services cannot be Stored	Services cannot be stored; time pressure in service execution; difficult to manage service demands, waiting time, right-time service.	Fixing service systems to adjust capacity.	Berry (1980); Lovelock et al. (2011); Zeithaml (1985); Zeithaml & Bitner (2009).

Customer Participation Services require coproduction from customers.	Attitude and behavior of service providers and customers hugely influence overall service quality, satisfaction or future use intentions.	Ensuring standardization in service quality in service execution.	Berry (1980); Lovelock et al. (2011); Zeithaml (1985); Zeithaml & Bitner (2009).
No ownership The ownership of services cannot be transferred.	Nothing remains after consumption; difficult to provide equal service experience; less time to evaluate quality; postpurchase dissonance.	Reducing dissonance by ensuring service benefits and customer satisfaction.	Kotler & Bloom (1984); Lovelock et al. (2011); McColl-Kennedy (2003); Zeithaml & Bitner (2009).

2.2.2 Exploring the nature of service:

The fundamental characteristics of services are based on *intangibility, inseparability, variability*, *perishability, customer participation* and *no ownership* (see Table 2.1). Research on services has always addressed these characteristics to identify their challenges and opportunities. As such, theories and models in services literature have always focused on these characteristics to extend knowledge.

'Intangibility' is the most basic nature of services which distinguishes them from goods (Shostack 1977). Although intangibility is an important nature of services, it is logical to think about intangibility on a continuum ranging from highly intangible to slightly intangible (Lovelock et al. 2011; Zeithaml & Bitner 2009). Consumers cannot make a full evaluation of service quality before purchase because of this nature. It indicates that the elements of service cannot be tasted, smelled, touched or seen (McColl-Kennedy 2003). As services are inherently intangible, it is very difficult for customers to evaluate service quality before consumption. Moreover, service providers are generally located in different locations. As a result, it is harder for customers to compare a particular service performance with other providers due to the lack of easily available reference points (Lovelock et al. 2011). Services also cannot be experimented with or sampled before involvement in the exchange process, which creates additional perceived risk for consumers in terms of functional or emotional benefit (Akter et al. 2010a; Dagger & Lawley 2003).

'Inseparability' refers to the simultaneous production and consumption of a service. It indicates that it is very difficult to separate the service from its provider (Berry 1980; Zeithaml 1985). It also indicates that customers are expected to cooperate and coproduce the service by interacting with the provider's equipment, facility and systems (Vargo & Lusch 2006). The degree and nature of consumers' involvement in the service process influences service performance and the quality of the encounter (Dagger & Lawley 2003). In other words, the quality of interaction between provider and customer influences the customer's perception of service quality and satisfaction. This feature indicates that both service providers and consumers are required to play an active role in order to enhance productivity, experience and satisfaction. This also highlights the roles of dynamic 'front stage' and 'back stage' to provide better customer experience (Sousa & Voss 2006).

'Variability' implies that it is difficult to maintain consistency in service outcomes (Berry 1980; Lovelock et al. 2011; Zeithaml 1987; Zeithaml & Bitner 2009). Because of the use of people in service delivery, simultaneous production and consumption and other extraneous factors, wide variation is seen in service performance. As people are involved in the service process, providers and customers with differing backgrounds make it difficult to control service quality. As such, differences in attitudes, transaction speed and quality of performance influence service interaction and sometimes lead to service failures (McColl-Kennedy 2003). Variability also indicates that the difference in provider and customer orientations in terms of personality, manner and actions leads to variation in service perceptions and evaluations. Due to service variability, it is not always possible to generate identical service outcomes each time the service is executed. Thus, it is critical to reduce variability by adopting standardized procedures at all service touch points which can be done by adopting rigorous management of all service quality dimensions.

'Perishability' indicates that services perish (McColl-Kennedy 2003). Services are ephemeral and cannot be stocked. It also suggests that services cannot be returned once they have been purchased. It is important to manage demand levels by matching service capacity (Zeithaml & Bitner 2009). It is also critical to manage demand and supply at a particular time to satisfy service needs. Thus, in case of no demand, service is wasted and, in case of over demand, customers have to wait. Service providers face major challenges when there is variation in demand. Thus, a critical task is to manage demand levels according to available resources. In addition to these basic characteristics of services, the role of the customer in production and delivery influences service performance (Berry 1980). Since service is an exchange process, the quality of customers' input influences service outcomes (Zeithaml et al. 2004). To improve the quality of input, customers should be provided with proper knowledge about the service process using communication channels. For high involvement services, such as in health care, it is often important to train customers to provide quality input for a better service outcome

(Dagger & Lawley 2003; Lovelock et al. 2011; Zeithaml & Bitner 2009). Furthermore, as the exchange process in service does not transfer any ownership to customers, customer experience makes a real difference in service perception. This characteristic indicates the challenge of effectively reducing 'customer dissonance' to manage a long-term relationship. Overall, the basic characteristics of services indicate that service evaluations are highly subjective and context specific (Brady & Cronin 2001).

2.3 The definition of quality:

Numerous researchers and scientific associations have tried and are trying to define the concept of quality based on different aspects. It is safe to say, however, that as of this day we do not have one uniform definition. The main reasons of it are found in the below characteristics of quality (Veres, 2005, p. 68.):

- quality is objective and subjective at the same time, it can only be generalized to a limited degree,
- among its factors there are specifications, which can be measured; and others, that only can be appraised,
- quality can mean a technical-efficiency level and any departure there from (condition),
- it has perceivable use effects and effects that the purchaser does not consciously perceive.

2.3.1. Development of the definition of quality:

Parányi (2003, 2006) describes the change of the concept of quality in light of the historic development. Quality originally was connected to tangible products and as supported by Juran`s "*fitness for use"* (Juran, 1988) *and* Crosby`s "*zero defect"* theory (Crosby, 1979). Later this interpretation expanded lineally as well and experts started to apply the concept of quality (and its criteria) to all elements of the production chain, creating products or services, rather than to one product. In other words, they addressed the quality of the entire production or consumption process (e.g. in assessing the quality of a product, the production-, sale-, and customer service procedures are taken into consideration as well). Feigenbaum defined the quality of a product or a service as *„the total composite product and service characteristics of marketing, engineering, manufacture, and maintenance through which the product and service in use will meet the expectations of the customer"*
(Feigenbaum, 1991, p. 7).

A – conformance with standards

B – conformance with practical needs

C – conformance with customer's needs

D – conformance with customer's latent needs

E – conformance with corporate culture;

The subsequent development was characterized by a shift towards the service quality of intangible products (such as research and development, engineering). As the significance of services in the economy skyrocketed, quality too started to have an ever-expanding importance in the sector. Quality was interpreted relevant to the full spectrum of the service sector: from industrial services (e.g. telecommunication), through personal and small-business services (e.g. hair salons) to public services (such as education and health care).

One constant component of the quality definitions is meeting customer expectations or demands. Be it a product or a service, suitability to meet customer demands is a significant, if not the most important, element of the concept of quality.

As Freund put it: "the characteristics of a product or service that bear on its ability to satisfy stated or implied needs" (Freund, 1985, p. 50). Pursuant to Deming`s interpretation, quality "exceeds" the expectations of the buyer during the lifetime of product (or service). In his opinion the concept of quality has no meaning, unless it composes (frames) the expectations of buyers (Deming, 1986).

According to the traditional interpretation, quality meant compliance with internal prescriptions and standard; then it was identified with suitability for use; in the most current interpretation of the word, quality means not simply meeting or exceeding buyer needs, rather meeting or exceeding environmental, social expectation (see figure no. 2.1)

Today "quality is construed in a more comprehensive manner; it refers to the entire organization (company, instrument), its environment, infrastructure and the society as well. Organizational, social culture as well as the category of life-quality gain true quality content." (Parányi, 2006, p. 8.).

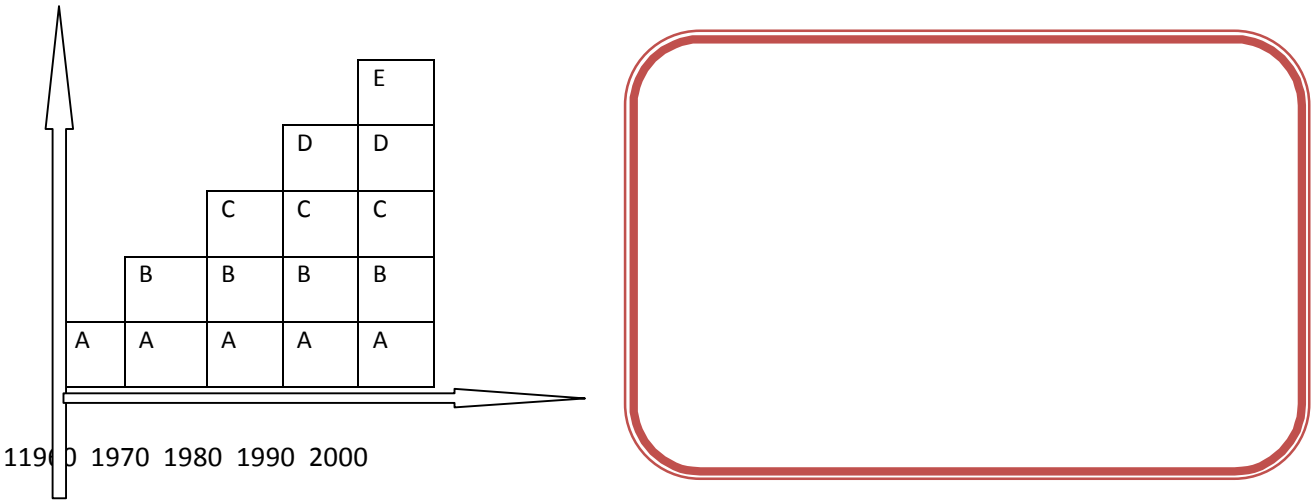


Figure No 2.1: Development of the interpretation of quality (Source: Kormos, 2000, p. 18.)

2.3.2. Approaches to defining quality:

Majority of the definitions are originated by the etymological interpretation, which holds that quality is a status, a characteristic, the fitness or the value of performance. In Garvin`s definition quality means the totality of the above factors (Garvin, 1984).

Among the multiple definitions of quality, besides the above comprehensive interpretation, further interpretations are possible according to the direction or the main factor of the definition. Garvin (1988, pp. 41-46.) on this basis defined the five quality approaches as follows:

- Transcendent: quality can only be determined by empirical experiences, e.g. we can only judge the work of a fine artist (the work quality) if we look at his/her works.

- Product-based approach: quality is defined by the existence or lack of certain characteristics. If the product or quality – from the viewpoint of the person making the judgment – has advantageous, desirable characteristics, the customer will find it a high quality product or service.

- Manufacturing-based approach: quality means that the product or the service in the course of manufacturing conforms to the predetermined expectations and specifications. If the specifications are not met, the quality is poor. This approach presumes that the product or service specifications are closely connected to the buyers` expectations, and compliance with those will determine customer satisfaction.

- User-based approach: quality is determined by the user. Meeting the costumer`s expectations is the central criteria of the concept of quality. This approach is parallel to the "marketing concept" of Kotler (1998), which states that the primary objective of an organization is to fully satisfy the customer.

- Value-based approach: quality is determined by the rate of the efforts, the customer must exercise to receive the service or to possess the product (e.g. money, searching) and the gain (value) derived from using the service or acquiring the product. Acquiring a certain product at a reasonable price will make the customer perceive that quality is higher (feeling that it is worth it), than purchasing the same product at a high price.

2.3.3 Process Quality:

Veress determines quality as the quality of the overall production-consumption procedure. Veress maintains that: "the quality of the production-consumption process is the judgment of those interested in the production-consumption procedure (the consumer, the producer and the society) on the value of the above procedure as influenced by the environment of

the connection existing between the procedures (e.g. the development of market economy, the organizational structure of the state administration and that of the market economy" (Veress, 1996, pp. 32-39.). Besides the subjective characteristics of the quality, he includes the factors of the reliability of the procedure (the expected time of procedure`s faultless operation) and the safety of the procedure (whether the procedure contains no danger for the concerned parties).

The definition of quality needs to be separated from the concept of fitness. He maintains that "the procedure (product, system) is fit if it meets the provisions of the given requirement system" (Veress, 1996, p. 40.). However, in the assessment of customer, compliance with the criteria does not necessarily equal to quality (Veress, 1996).

2.3.4 Strategic Quality:

As we could see, there are several theories on quality, but –regardless of the chosen definition – we must avoid interpreting it as a well-sounding but empty phase. On the organizational level quality and quality-consciousness is a strategy, which is implemented in the organization, pervading and following the procedures. Tenner and DeToro held that quality is "a basic business strategy that provides goods and services that completely satisfy both internal and external customers by meeting their explicit and implicit expectations" (Tenner and DeToro, 1992, p. 31.).

2.3.5 Conclusions Relevant to Quality definitions:

The ISO 9000 quality management system provides a general interpretation of quality. The technical dictionary (ISO 9000:2005) defines quality as the "degree to which a set of inherent characteristics fulfills requirements". In this format the definition reflects the general nature of the standards, and requires explanation at many points depending on the field of application.

The definition can be interpreted relevant to the production/service procedure and to the result of the procedure. According to the premise of the definition, quality is an overall value, derived by comparing the expectations and the inherent characteristics; but because of its general nature, it is not clear which are the examined characteristics, and what expectations those have to meet. In case of products (both tangible and intangible) these are objectively determined requirements. In case of services subjectivity is significant, because circumstances are determined not only by the individual, but by the service and its environment too.

In connection with physical or other (such as intellectual) products and their production, the characteristics to be assessed are often clearly identifiable (such as 14 screw nuts,

where the characteristics are determined by standards (such as diameter, thread etc.) In comparison, in case of services (which are based on the interaction of the individual and the organization, and where the role of the subject is stressed) intrinsic characteristics are also determined by the process of the service, the result, the geographical place, or the culture of the place where the service is provided, and this makes any generalization problematic.

In this thesis, based on the relevant professional publications, I accepted the following comprehensive definition of quality (which in my opinion is a comprehensive definition of high information value): *Quality means the comprehensive value judgment of the customer rendered in connection with a given unit, expressed by the degree of meeting or exceeding the material internal and external specifications relevant to the unit, as perceived by the customer.*

Intrinsic characteristics are determined by the organization and the objective features determined by entities surrounding the organization (e.g. sectoral standards, internal rules, social expectations etc). External qualities are rather determined by subjective customer expectations and preferences relevant to the unit. The factors determining quality may of course change on an individual basis.

2.4 Conceptualization of Service Quality:

Parasuraman, Zeithaml, and Berry (1985) suggest that service quality is an abstract and elusive construct, mainly due to the unique characteristics of services— intangibility, heterogeneity, and inseparability of production and consumption. Brady and Cronin (2001) maintain that despite a number of service quality studies, there is no consensus on the conceptualization and measurement of service quality, the dimensions of service quality, and the content of the dimensions.

Service quality is described as a form of attitude, as it is a global judgment relating to the superiority of the service (Cronin and Taylor, 1992; Carman, 1990; Parasuraman, Zeithaml and Berry, 1988). However, service quality is not equivalent to satisfaction (Cronin and Taylor, 1992; Bolton and Drew, 1991; Parasuraman et al., 1988). Service quality and customer satisfaction are distinct in two aspects. First, service quality is a long-run overall evaluation, compared to customer satisfaction, which is a specific transaction measure (Bolton and Drew, 1991; Bitner, 1990; Parasuraman et al., 1988).

Second, although service quality and customer satisfaction may both result from the comparison of customer expectations with the service performance (the disconfirmation paradigm), the term —expectations is viewed differently in the service quality and satisfaction literature. Expectations are viewed as customers‘ predictions about service performance in the

satisfaction literature, whereas expectations are viewed as the desires or wants of customers in the service quality literature (Parasuraman et al., 1988).

2.4.1 Nordic Perspectives versus American Perspectives of Service Quality:

Brady and Cronin (2001) suggest that there are generally two types of alternative conceptualizations of service quality presented in the service marketing literature. One is the —Nordic perspective (Gronroos 1984, 1982), which conceptualizes that functional and technical quality are two dimensions that contribute to a customer‘s overall perception of service quality. The other is the —American perspective (Parasuraman et al., 1988), which adopts the terms reliability, responsiveness, empathy, assurances, and tangibles that indicate service encounter characteristics. While the —American perspective dominates the services marketing literature, a consensus over which approach is superior has not been reached (Brady and Cronin, 2001).

More detailed discussion regarding different theory of service quality models will be discussed in the next chapter.

2.5 The nature and characteristics of Service Quality in the mobile telecommunication Industry

If we say that "Quality" is a word, and it has various points of direction, mobile telecommunication is definitely far more complex than its simple meaning. What precisely is service quality as applied to telecommunications and how is it measured? How are different aspects of service quality affected by the transition to competition, technological developments, and other changes? How do customers differ in their requirements for quality? Obviously, concern for network reliability, availability of new services, consumers trust, regulation and competition play a vital role to determine the service quality in the mobile telecommunication industry, apart from the regular framework for measuring service quality for any business/service type.

The Service Quality in the mobile telecommunication industry depends on both the telephone network and the supporting services. The first is known as ‘equipment and system oriented quality’ and the second as ‘people and process oriented quality.’ Equipment and system oriented quality consists of activities directly related to the network while people and process oriented quality consists of activities provided over the telephone network or face to face. The equipment and system oriented quality can be either objective (e.g. percent of access lines served by digital switches) or subjective (e.g. satisfaction with voice clarity).Similarly, people and process oriented quality can be either objective or subjective. (Yusuf, 2010)

In mobile telecommunication literature, service quality has been conceptualized in different ways. Some of the researchers measured mobile service quality as customers' ‟overall

evaluation of their experience with the service provider, and did not consider it as a multidimensional construct (Akroush et al., 2011; Aydin & Özer, 2005; Edward et al., 2010; Liu et al., 2011; Shin & Kim, 2008; Lai et al., 2009). Nonetheless most researchers considered mobile service quality as a multidimensional concept. However, the number and content of these dimensions are different across studies. Some of them used and adapted generic models like SERVQUAL to measure mobile service quality (Boohene & Agyapong, 2011; Leisen & Vance, 2001; Negi, 2009; Wang & Lo, 2002). Moreover, SERVQUAL or SERVPERF, as very general instruments, are inadequate to measure mobile service qualities in making satisfactory service related decisions because the dimensions of service quality depends on the type of service offered (Babakus & Boller, 1992). For example, Wang and Lo (2002) employed a modified version of SERVQUAL model to measure service quality of mobile phone operators in China. They added network quality dimension to the model based on focus group discussions and expert opinions. According to their findings based on structural equation modeling, the most important service quality dimensions in predicting customers' ‟overall satisfaction was assurance, followed by reliability and network quality. But they found no evidence to support the influence of responsiveness and empathy on customer satisfaction (Wang & Lo, 2002).

Similarly, Negi (2009) tried to modify SERVQUAL scale to best fit in the context of mobile telecommunication market in Ethiopia. In a pilot study, respondents were asked about additional service quality dimensions by using open-ended questions. Three additional dimensions were derived including network quality, compliant handling and service convenience. According to regression analysis, network quality scored the highest in predicting overall customer satisfaction followed by reliability, empathy and assurance (Negi, 2009).

Some researches in mobile telecommunication industry extended the traditional definition of service quality and incorporated aspects particularly relevant to mobile services. For example, Eshghi et al. (2008) used literature review to identify thirty two attributes relevant to mobile telecommunication industry. Six factors were derived using factor analysis including relational quality, competitiveness, reliability, reputation, customer support and transmission quality. These factors were taken as service quality dimensions. Based on regression analysis, competitiveness and reliability had the greatest effect on customer satisfaction followed by relational quality and transmission quality. Also, a regression analysis was done to identify most important service quality dimensions in predicting repurchase intension of customers. Results indicated that relational quality and reliability are the most determinant factors in customers' purchase decisions (Eshghi et al., 2008).

In another study on the perceptions of mobile phone operators‟ service quality, Santouridis and Trivellas (2010) suggested that customers evaluate service quality of their mobile phone operators based on quality of six dimensions including network, value-added services, mobile

devices, customer service, pricing structure and billing system. This scale was administered to two hundred five residential non-business mobile phone users in Greece. Their findings show that customer service, pricing structure and billing system are the service quality dimensions that have the most significant positive effect on customer satisfaction, which in turn have significant positive impact on customer loyalty (Santouridis & Trivellas, 2010).

Table 2.2 Dimensions of Mobile telecom Service Quality in different Literature (Adapted from : Hosseini et al.,2013)

Dimensions	Researchers
Network Quality	Wang and Lo (2002); M. K. Kim et al. (2004); H. S. Kim & Yoon (2004); Kassim (2006); Lim et al. (2006); Eshghi (2008); Ling & De Run (2009); Negi (2009); Pezeshki, Mousavi & Grant (2009); Santouridis & Trivellas (2010); Wong (2010); Gunjan et al. (2011); Gautam (2011); Liang, Ma & Qi (2012)
Value-added services	M. K. Kim et al. (2004); H. S. Kim & Yoon (2004); Lim et al. (2006); Santouridis & Trivellas (2010); Gunjan et al. (2011); Jahanzeb, Fatima & Khan (2011)
Pricing Plans	M. K. Kim et al. (2004); Lim et al. (2006); Ling & De Run (2009); Santouridis & Trivellas (2010); Gunjan et al. (2011)
Employees Competency	Eshghi et al. (2008); Krishnan & Kothari (2008); Jahanzeb et al. (2011)
Billing System	Lim et al. (2006); Krishnan & Kothari (2008); Pezeshki et al. (2009); Santouridis & Trivellas (2010)
Customer Service	H. S. Kim & Yoon (2004); M. K. Kim et al. (2004); Lim et al. (2006); Kassim (2006); Pezeshki et al. (2009); Negi (2009); Negi & Ketema (2010); Y. E. Kim & Lee (2010); Santouridis & Trivellas (2010); Gautam (2011); Gunjan et al. (2011); Jahanzeb et al. (2011); Khaligh, Miremadi & Aminilari (2012)
Convenience	M. K. Kim et al. (2004); Ling & De Run (2009); Negi (2009); Liang et al. (2012)

Moreover, Lu et al. (2009) developed a multidimensional and hierarchical model to measure mobile service quality. They proposed that mobile service quality was composed of three primary dimension, which are interaction quality, environment quality and outcome quality. Each primary dimensions further included sub-dimensions. An instrument was developed and empirically tested using data collected from four hundred thirty eight mobile brokerage service users (Lu et al., 2009). Also recently, Zhao et al. (2012) used this model to assess the effect of

Network Operator

- Network Coverage
- Network Stability
- No network congestion
- Prompt customer service
- Instant compliant handling & Providing solutions

mobile telecommunication service quality on customer satisfaction and the continuance intention of mobile value-added services. Their findings showed that all three dimensions of service quality have significant and positive effect on customer's satisfaction and continuance intention (Zhao et al., 2012).

Many other researches were reviewed and mobile telecommunication service quality dimensions which can be evaluated by customers in their decision making have been identified. (Hosseini et al.,2013) Table 2.2 on the previous page summarizes identified dimensions along with their respective sources.

Physical Channel/Interpersonal Interaction

Between Operator's Employee and Customer through different touch points.

Electronic channel

Mobile Telecom service received by customers

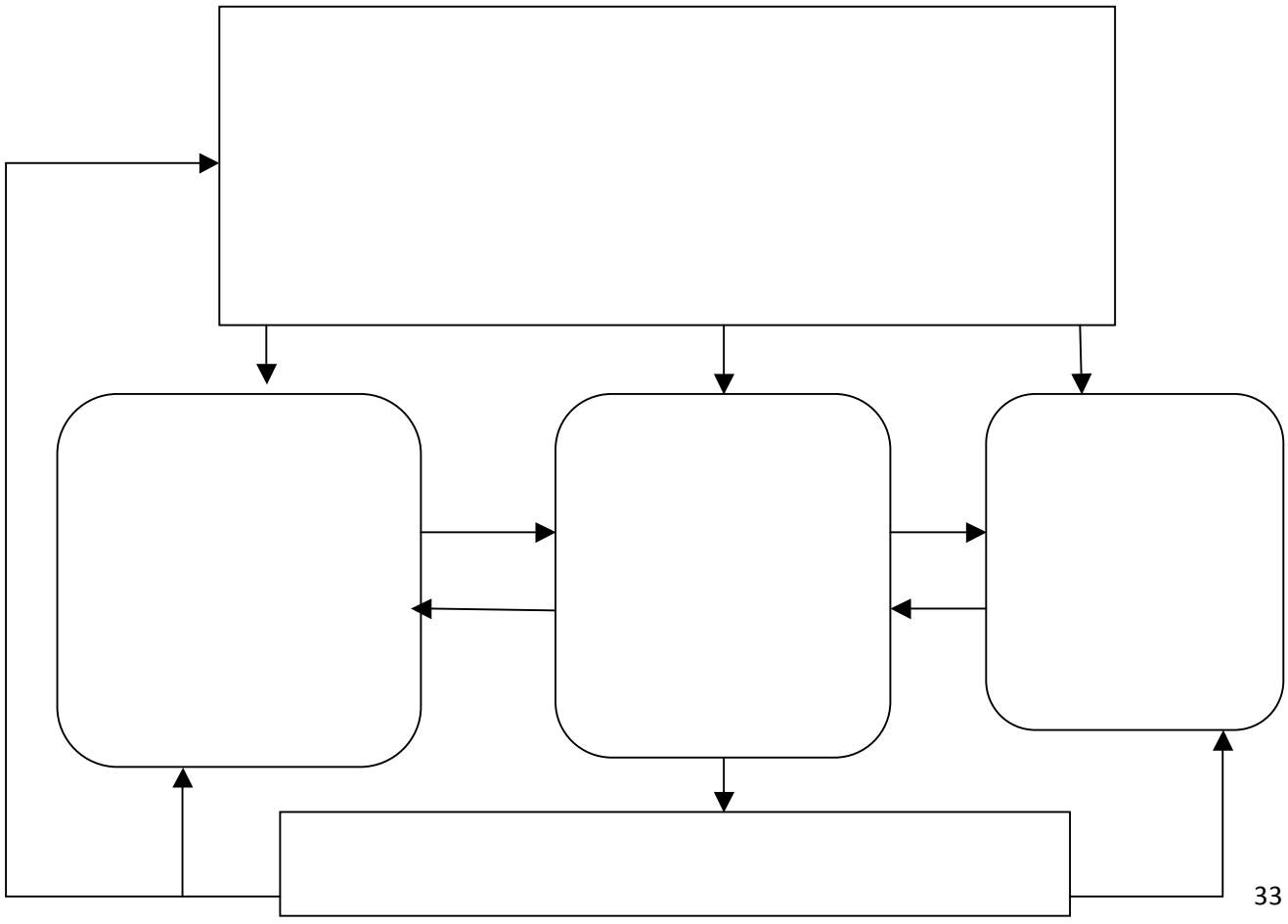
Access by dialing hotline numbers , SMS, E-mails etc.

Feedback regarding Service Quality of the Operators

2.5.1 Nature of Mobile Telecom Service Quality Channel:

There are practically two different types of channel that exist in providing mobile telecom service. One is Electronic channel and the other is Physical channel .Through the ***Electronic Channel*** customer compliant handling, providing solutions of customers' problem, Bill enquiry, Mobile health service, bill payment, etc. services are given to the customer. This study defines the mobile phone as the electronic channel or as the means of communication using advanced telecommunications, information and multimedia technologies through which a service is delivered to (or reaches) the customer (Sousa & Voss 2006).

Figure2.2: Mobile Telecom Service quality Platform



The study defines ***Physical service*** as the customer's service experience provided with human intervention In this particular instance, human intervention takes place in the front office (i.e., employee-customer interaction), whereas technology-based service systems operate in the back office (service delivery systems) for assisting in the physical service delivery process. The range of services that customers usually receives here are : SIM related services, availability of connections, consultation etc.

2.5.2 Service Quality Challenges of mobile operators in Bangladesh:

The mobile telecom industry in Bangladesh, like many other cases in other countries, has seen growth in mobile penetration that has actually exceeded the primary expectations. It has undoubtedly had a transformative impact on the aggregate economy, Employment, communication, health, productivity and overall quality of life. It has also shown its impact on rural communication which has been transformed in the form of small enterprise, development in agriculture, providing m-health services to the unreachable and vulnerable rural community and created a positive impact on poverty alleviation. The Government's view to "Digital Bangladesh" has also likely to present a major opportunity to this sector.

Mobile Telecom Operators in Bangladesh, like any other developing country face challenges in sustaining margins with declining ARPU (Average Revenue per user). Population Distribution Patterns in developing markets complicate the situation since access to telecom services vary significantly between urban and rural areas. Operators in this case, need to balance the cost of operation in congested and saturated urban set ups with costs of new network rollouts in other areas. In this case, tower sharing offers a compelling proposition for saving costs and reducing time-to-market.(AT Capital research, 2010)

Bangladesh Mobile telecom sector already suffers one of the highest tax rates in the world, which also works as a hindrance to provide cheap rated service to the customers. This has been a major complain from the customers. (AT Capital research, 2010)

Higher Broadband wholesale price, lack of information technology enabled services, and regulatory uncertainty are also some key challenges that the mobile operators in Bangladesh face. (AT Capital research, 2010)

Lack of parameters in monitoring and setting specific benchmark in Service Quality measurement from BTRC is also a factor. Operators usually monitor and control Service Quality by their own set parameters. For this reason, there is no common unique platform where all the mobile operators can be monitored and compared as per their given service. Also, lack of awareness among the consumers regarding the mobile telecom service quality and the role of the regulatory institution for resolving these issues are highly absent, therefore, customers are reluctant to address these issues robustly.

2.5.3 Overall Research Gaps: Service Quality in the Mobile Telecommunication industry in Bangladesh:

Like other sectors, Service Quality in telecom sectors is becoming an issue day by day almost in every country, because customer satisfaction and continuance intention is highly related to service quality, which is also a prime factor for a company's profitability. However, there are few studies with adequate sample size and rigorous study design which have assessed the service quality of Mobile Telecom sectors in Bangladesh.

The first research gap relates to a lack of published research regarding customers' perceptions of service quality in the Bangladesh mobile communications market. The service quality dimensions and how these dimensions impact on subscribers‘ perceptions of service quality in Bangladesh have not been fully investigated.

The second research gap relates to a lack of published research pertaining to the service quality dimensions that the Bangladesh mobile subscribers perceive to be more or less important. This research gap is important, as mobile communication services providers cannot be confident that they are resourcing the appropriate dimensions of mobile communication services that their subscribers perceive as important.

The third research gap relates to a lack of published research investigating the relationships between service quality, customer satisfaction, continuance intention and perceived switching costs, in the Bangladesh mobile communications market. This research gap is important as several service marketing academics suggest that new studies are required to investigate the relationships that exist among these important marketing constructs in service industries (Lai et al., 2007; Adyin and Ozer, 2005; Wang et al., 2004; Caruana et al., 2000; Nguyen and LeBlanc, 1998; Cronin and Taylor, 1992; Bitner, 1990).

2.6 Literature Review (Theory)

2.6.1 Overview:

The objective of this chapter is to explore different service quality theories and find out the fundamental nature and the gaps of these theories from the service quality on the mobile telecommunication perspectives particularly in developing countries like Bangladesh. In the previous chapter (Chapter 2) the contextual application of service quality has been discussed in detail, hence, this chapter will explore in detail different service quality theories which have been widely used in academic world and helped to explore its application in different industrial context. So, the main focus of the chapter is to concentrate on the service quality concept from different perspectives. This chapter argues that the nature of service quality for a technology-mediated service is complex, thus, it is necessary to explore this concept using a cross-disciplinary approach, that is, generic theories from marketing, and information systems research in services literature.

This chapter is designed as follows:(section 3.2) explores different generic service quality theories. (Section 3.3) discusses service quality theories in Information System and their relevance to mobile service context, the next section (section 3.4) emphasized on service quality theory focused particularly on mobile telecom area to critically analyze their dimensions, relevance and limitations. (Section 3.5) discusses challenges in mobile telecom related service quality theories. The next section (Section 3.6) explores the associations of Service Quality and its outcome constructs like Satisfaction and Behavorial intention, particularly on Continuance intention and Net Promotion Intention. This section will try to focus in detail on different theories related to this and the underlying gaps in these literatures. (Section 3.7) will identify the overall gaps in the above mentioned area in the form of major and specific gaps and their research specific relevance. Finally, (section 3.8) provides a summary of the chapter.

2.6.2 Defining Service Quality in Theories:

Quality is an important ingredient for any service. The Japanese viewpoint treats quality as ‘zero defects’ (Parasuraman et al. 1985) and some researchers (e.g., Crosby 1979) treat it as ‘conformance to requirements.' In a comprehensive review, Reeves and Bednar (1994) identified four dominant views of quality: quality as excellence, quality as value, quality as conformance with specifications and quality as meeting expectations. According to Grönroos (2000), quality is a complicated and indistinct concept and there is no single universal definition of quality in the literature. In addition, due to its ‘elusive’ nature (Parasuraman et al. 1985; Smith 1999), research in this sector has still remained ‘unresolved’ (Caruana et al. 2000, p. 57). Indeed, it has remained a difficult concept to grasp (Brady & Cronin, 2001) and “far from conclusive” (Atbanassopoulos 2000, p. 191). The extant research has undertaken either a

production-oriented or customer oriented view of quality (Gummesson 1991). Whereas the production or manufacturing-based approach focused on objective or technical quality to measure standardized products (Crosby 1984; Kasper 1999; Oliver 1997), the customer-oriented approach focused on the perceptions of customers or quality in the eye of the customer (Andaleeb 2008; Brady & Cronin 2001; Dagger et al. 2007; Gronroos 1984; Parasuraman et al. 1988; Rust & Oliver 1994). In addition, due to its 'elusive' nature (Parasuraman et al. 1985; Smith 1999), research in this sector has still remained 'unresolved' (Caruana et al. 2000, p. 57). Because of the complex nature of quality, the customer-oriented view has become the mainstream approach in defining quality in service research (Schneider & White 2004). Thus, in focusing on the customer-oriented view, the International Telecommunication Union (1994) defines it as "the collective efforts of service performance, which determines the degree of satisfaction to the end user." The European Union's R&D in Advanced Communications Technologies in Europe (RACE 1994) program defines quality of service as "a set of user perceivable attributes of that which makes a service what it is. It is expressed in user-understandable language and manifests itself as a number of parameters, all of which have either subjective or objective values." These definitions reflect that quality of service should be viewed from the users' point of view to measure the performance level of an entity.

Dagger et al. (2007) define quality "as a consumer's judgment of, or impression about, an entity's overall excellence or superiority" which is consistent with the generic definitions in services literature provided by Bitner and Hubbert (1994), Boulding et al. (1993), Cronin and Taylor (1992) and Parasuraman et al. (1985, 1988). In defining and conceptualizing perceived service quality, Gronroos (1984) suggests using expectation as a reference point against which performance can be judged, but Parasuraman et al. (1985, 1988) define perceived service quality as the difference between expected and perceived service. Parasuraman et al.'s (1988) difference score definition became very popular; however, it faced serious criticisms from subsequent researchers (e.g., Babakus & Boller 1992) as expectation score adds little value to service quality measurement. Thus researchers (e.g., Brady & Cronin 2001; Dabholkar et al. 2000) focus only on "perception measures" in order to define and conceptualize perceived service quality as perception scores performed better than difference scores.

The conceptual definition of service quality has always received an abstract focus by identifying the dimensions as a second-order factor model (Gronroos 1984; Parasuraman et al. 1988; Rust & Oliver 1994) or third-order factor model (Brady & Cronin 2001; Dabholkar et al. 1996; Dagger et al. 2007; Fassnacht & Koese 2006; Parasuraman et al. 2005). This dimensionality of the service quality concept suggests that service quality might have first-order, second-order or third-order dimensions which are reflected by a higher-order overall perceived service quality. It indicates that overall service quality has a reflection over dimensions and sub dimensions.

Highlighting the complexity of such hierarchical dimensions of the service quality concept, Dagger et al. (2007, p. 24) suggest that "modeling service quality in this way recognizes that the evaluation of service quality may be more complex than previously conceptualized." The extant literature has also emphasized that conceptualization of service quality should be context specific (Babakus & Boller 1992; Carman 1990; Dabholkar et al. 1996; Dagger et al. 2007).

Although studies have frequently highlighted the context-dependent nature of the service quality concept, relatively few studies have focused on such modeling. As such, there is evidence of many failed attempts to capture service quality by applying generic service quality models in new contexts (Dagger et al. 2007). Overall, synthesizing the above findings, the study defines service quality as a multidimensional, hierarchical and context-specific concept which should always be viewed from consumers' perspectives (Akhter, 2012).

2.6.3 Generic Service Quality Theories:

Traditionally, generic models (e.g., Gronroos 1982; Parasuraman et al. 1985; Rust & Oliver 1994) have played a predominant role in service quality literature and have been applied in different disciplines, such as, services marketing, information systems and health care. In fact, marketing literature, particularly services quality and customer satisfaction, have played a crucial role in establishing the foundation for traditional service quality theory (Brady & Cronin 2001). In the following sections, this study discusses the classic service quality theories for typical service settings such as:

Firstly, this study focuses on the Nordic model which was introduced by Gronroos (1982, 1984). This model suggests that perceptions of service quality should be measured under two dimensions (Gronroos 1982), that is, functional quality (how) and technical quality (what). The functional quality focuses on the delivery mechanism and captures customers' perceptions while services are delivered (Brady & Cronin 2001). And the technical quality focuses on service information and captures customers' reactions to it. Gronroos (1984) based his arguments on the disconfirmation paradigm and suggested that the service quality should be measured by comparing expected service with perceived service. Although this is one of the foundational theories and famous for its seminal conceptualization among researchers (e.g., Bitner 1990; Lassar et al. 2000; Oliver 1997; Rust & Oliver 1994), it has been seriously criticized for its limited dimensions. As a result, subsequent literature (e.g. Brady & Cronin 2001; Dabholkar et al 1996; Parasuraman et al. 2005) proposed service quality as a multilevel and multidimensional concept. Some researchers (e.g., Carman 1990; Dabholkar et al. 1996) questioned the absence of sub dimensions and argued that it is necessary to integrate sub dimensions to grasp the complexity of human perceptions.

Secondly, the study concentrates on the SERVQUAL model (Parasuraman et al. 1988). This model (see Table 3.1) is quite dominant in services literature (Ma et al. 2005; Jia et al. 2008) and applied widely in industry (Brown et al. 1993), such as, health care, public recreation centers, banking, etc., which sometimes indicates that scholars around the world are using SERVQUAL as a basis for their own industries (Parasuraman et al. 1990). It may be noted that the initial exploratory research of Parasuraman et al. (1985) came up with 10 dimensions for assessing any service by consumers and these are tangibles, reliability, responsiveness, communication, credibility, security, competence, courtesy, understanding and access. However, because of the overlapping nature of the initial dimensions, this model was later modified into five dimensions (reliability, responsiveness, assurance, empathy and tangibles) and named as the SERVQUAL model (see Table 3.1) (Parasuraman et al. 1988).

Table 2.3 Summary of the SERVQUAL model (Adapted from Akhter, 2012)

Original 10 dimensions (Parasuraman et al. 1985)	**SERVQUAL dimensions (Parasuraman et al. 1988)**	**Definitions**
Reliability	*Reliability*	Ability to perform the promised service dependably and accurately.
Responsivenes	*Responsiveness*	Willingness to help customers and provide service.
Competence, Courtesy Credibility, Security	*Assurance*	Knowledge and courtesy of employees and with trust and confidence.
Access, Communication and Understanding Customer	*Empathy*	Customized and caring attention.
Tangibles	*Tangibles*	Appearance of physical facilities, equipment, personnel and communication materials

Using SERVQUAL, researchers measure service quality by comparing service expectation with service perception under 22 Likert scale-based items. The perceived service quality score is calculated by subtracting the perception score from the expectation score across 22 pairs of items which could be used for individual diagnostic purposes as well as for an overall service quality measurement (Brown et al. 1993). However, despite its popularity and widespread application across the industry, the model has been seriously criticized for being designed as a generic measure across all contexts rather than a customized one (Babakus & Boller 1992; Carman 1990; Dabholkar et al. 1996). Customization may take place in the form of adding new items or changing the wording of the items as per the application (Carman 1990; Dabholkar et al. 2000; Dagger et al. 2007). Modified versions of the model dropped the expectation dimension entirely (e.g., Boulding et al. 1993; Cronin & Taylor 1992; DeSarbo et al. 1994; Parasuraman et al. 1991, 1994; Zeithaml et al. 1996) because the expected service is always higher than the perceived service (Brady & Cronin 2001) and it is hard to measure service expectation in the case of credence properties such as health services (Andaleeb 2008; Dagger et al. 2007). Furthermore, some researchers (e.g., Boulding et al. 1993) added dimensions to the expectation portion of the model and some others (Carman 2000; DeSarbo et al. 1994) applied conjoint analysis instead of the difference method to determine service quality perception. Methodologically, the model was questioned because of its item-total correlation (Carman 1990; Dabholkar 2000), unidimensionality (Mangold & Babakus 1990; Brady & Cronin 2001), construct validity (Peter & Churchill 1986; Ma et al. 2005), poor reliability of the difference score problem (Brown et al. 1993) and limited contextual application (Dagger et al. 2007; Finn & Lamb 1991). Subsequent studies (Dabholkar et al. 1996, 2000; Brady & Cronin 2001; Dagger et al. 2007; Teas 1993) mentioned that the disconfirmation model has conceptual, theoretical and measurement problems and suggested that alternative perceived quality models should be used. Therefore, Cronin and Taylor (1992, 1994) proposed that a direct measure of perceptions, such as SERVPERF, is a preferable means to avoid the discrepancy between expected and perceived service quality. They contend that SERVQUAL is too simplistic to measure this complex cognitive evaluation process by separately measuring the expected and perceived level of service quality and subtracting these scores. Critics both in marketing (e.g., Brown et al. 1993; Cronin & Taylor 1992, 1994; Teas 1993, 1994; Brady & Cronin 2001; Dagger et al. 2007) and in information systems (IS) (e.g., Kettinger & Lee 1997; Van Dyke et. al. 1997, 1999; Jia et al. 2008; Ma et al. 2005) point to conceptual and empirical difficulties with the original SERVQUAL instrument and suggest that alternatives to the original “gap scored” model be used. Despite the above mentioned weaknesses, the SERVQUAL model is still distinct from others in the overall assessment of interactive service because of its multiple dimensions for measuring service quality (Brady & Cronin 2001; DeLone & McLean 2003; Jia et al. 2008). However, since service quality perceptions represent latent variables and service takes place at

multiple levels under multiple dimensions, the major concern is to come up with such a model which is ***context-specific, hierarchical*** and ***multidimensional*****.**

Thirdly, according to Rust and Oliver (1994), overall perception of service quality is influenced by three factors: customer-employee interaction or functional quality (Gronroos 1982, 1984), service benefit or technical quality (Gronroos 1982, 1984) and service environment (Bitner 1992). The model highlights support for Gronroos's generic model (Bitner 1990; Lasser et al. 2000; Mohr & Bitner 1995; Oliver 1997; Rust & Oliver 1994) and service environment (Baker 1986; Bitner 1990; Spangenberg et al. 1996; Wakefield 1996) to measure service quality and solidify the positioning of this three-component model. Although the model was not tested empirically (Brady & Cronin 2001), similar models were applied in retail banking (McDougall & Levesque 1994) and health care samples (McAlexander et al. 1994; Dagger et al. 2007).

Fourthly, the study focuses on Dabholker et al.'s (1996) multilevel and multidimensional model to address the inconsistency of the factor structure of the SERVQUAL model and to capture the complexity of human perceptions. Although a good number of researchers (e.g., Carman 1990; Czepie et al. 1985; Dabholkar et al. 1996; McDougall & Levesque 1994; Mohr & Bitner 1995) have supported this model, they neither identified the subdimensions properly nor defined those adequately (Brady & Cronin 2001). Subsequently, Dabholkar et al. (2000) proposed some unique findings based on the antecedents, consequences, mediators and measurement of service quality for measuring physical service. The study supported "perception measures" rather than "difference measures" and "cross-sectional study" rather than "longitudinal study" to measure service quality.

Fifthly, Kang (2006) adopts a framework on the basis that service quality is multidimensional and has a hierarchical structure in order to measure service quality as perceived by cell-phone users in Korea. The framework involves identification of the dimensions of service quality as perceived by the cell-phone users, and the components that make-up each service quality dimension. Kang (2006) identifies two service quality dimensions as perceived by cell-phone users: functional quality and technical quality. However, Kang's (2006) study focuses on measuring only one of the identified service quality dimensions (functional quality) using a hierarchical approach.

Finally, the study focuses on another multilevel and multidimensional model introduced by Brady and Cronin (2001) which consists of three primary dimensions (interaction quality, outcome quality and physical environment quality) and nine subdimensions (attitude, behavior, expertise, ambient conditions, design, social factors, waiting time, tangibles and valence) based on users' perceptions to capture overall service quality. This study successfully synthesized the previous works of Gronroos (1982, 1984) and Rust and Oliver (1994) and proposed a

hierarchical service quality model. One of the greatest limitations of the model was the effort to establish it as an unifying model across all service industries; however, the authors acknowledged its inadequate representation of the population and emphasized the need for context-specific modeling (Brady & Cronin 2001). Overall, the authors called for further research in hierarchical modeling to better capture service quality perception of a particular service.

2.6.4 Findings and Gaps:

Although the extant literature has evidenced multiple dimensions of service quality, such as two (e.g., Gronroos 1982; Lehtinen & Lehtinen 1982; Mels et al. 1997), three (e.g., Brady & Cronin 2001; Rust & Oliver 1994), five (e.g., Parasuraman et al. 1988) and even ten (e.g., Parasuraman et al. 1985), there is no standard agreement as to the nature or content of dimensions in defining service quality (Brady & Cronin 2001; Dagger et al. 2007). However, it is generally agreed that service quality should be defined from the users' viewpoint and its conceptualization should result in multilevel, multidimensional constructs. After synthesizing all the quality parameters of all generic models, this study identifies that conceptualization and measurement of service quality should be based on users' perceptions (Parasuraman et al. 1985, 1988) and specific contexts (Babakus & Boller 1992; Carman 1990; Dabholkar et al. 1996), and that the dimensions of quality should be captured under an hierarchical and multidimensional manner (Brady & Cronin 2001; Dabholkar et al. 1996). These studies also found that "perception scores" performed better than "difference scores" in developing and validating the instrument for service quality in a cross-sectional context. One of the major gaps of all generic theories is that very few theories have focused on mobile electronic platform-based services to capture perceived service quality. No instrument has been specifically developed to measure health services over a mobile platform (Chatterjee et al. 2009; Ivatury et al. 2009; Mechael 2009; Varshney 2005; WHO 2011). Like this, no such instrument is also found to specifically measure for mobile telecommunication service quality. Lu et al. (2009) note that there is little research on how to measure the service quality of mobile communications. Lu et al. (2009) note that the SERVQUAL scale, the most popular instrument for measuring the service quality construct, has been criticized on both methodological and theoretical grounds (Babakus and Boller, 1992; Van Dyke et al., 1997).

Table 2.4 Generic service quality theories

Generic theory	Scope of application	Dimensions and sub-dimensions	Findings
Two factor service quality model by Gronroos (1982, 1984) SERVQUAL model by Parasuraman et al. (1985, 1988) 3 factor service quality model by Rust & Oliver (1994) A comprehensive framework for service quality (Dabholkar et al. 2000) Multilevel and multidimensional model by Brady & Cronin (2001) 2 factor multi-dimensional service quality model by (Kang, 2006)	A generic model of service quality applicable to any services. A generic model of service quality widely applied in health care. A conceptual model, later applied in health care by subsequent researchers. A generic model of service quality applicable to any services. Any service which is based on interpersonal interaction applied in health care. A framework on the basis that service quality is multidimensional and has a hierarchical structure in order to measure service quality as perceived by cell-phone users	Functional quality (delivery) and technical quality(information) Reliability, responsiveness, assurance, empathy and tangibles Service product (service outcome), service delivery and service environment Applied the SERVQUAL model, however, prominent for some ground-breaking findings. The customer-employee interaction (attitude, behavior, expertise), service environment (ambient conditions, design, social factors) and the information (waiting time, tangibles, valence). The framework involves identification of the dimensions of service quality as perceived by the cell-phone users, and the components that make-up each service quality dimension. (Functional & Technical Quality).	Perceived service quality depends on technical quality, functional quality and image. Service quality is the gap between expected and perceived service under five dimensions. Perceived service is determined by three factors. An antecedent-based service quality model predicts better in cross-sectional study. Satisfaction works as mediator between overall quality and intention. Service quality perceptions are multilevel and multidimensional. Service quality is multidimensional and has a hierarchical structure. This study focuses on measuring the perception of the users based on only one of the identified service quality dimensions (functional quality) using a hierarchical approach.
Overall findings: 1. Service quality models are found mostly based on user perception, context-specific, hierarchical and multidimensional. 2. Majority of the Service quality models are based on a components-based framework (as overall service quality), perception measures and cross-sectional study.			

Major Gap: Generic theories have not addressed the service quality of mobile electronic platform-mediated services.

Specific Gaps:

Gap 1: There was hardly any evidence for measuring the components of service quality for mobile electronic platform in those generic theories.

Gap 2: Till now no instrument has yet been developed to measure technical communication and interaction\(physical services) excellence in terms of technology-mediated service platform(Akhter, 2012).

In the light of the above mentioned discussion, the author of this research has adopted both SERVQUAL and the multidimensional and hierarchical approach as introduced by Brandy and Cronin (2001), and Dabholkar et al. (1996) to measure customers' perceptions of service quality in this study. The use of the multidimensional and hierarchical approach has received substantial support from several marketing academics and has been validated by several researchers (e.g. Clemes et al., 2007; Dagger et al., 2007; Brandy and Cronin, 2001; Dabholkar et al., 1996). Lu et al.'s (2009) findings provide empirically support for their proposed multidimensional and hierarchical model of service quality.

2.6.5 Service Quality theories in Information Systems (IS):

Service-oriented thinking is one of the fastest growing paradigms in information systems (IS) as the world becomes a service economy (Bardhan et al. 2010). Services account for 70% of gross domestic product (GDP) in developed economies (Ostrom et al. 2010) and more than 40% contribution in developing economies (Lovelock et al. 2011). This service-oriented growth is projected to remain constant in the foreseeable future. As such, IT organizations have started viewing systems as services in order to accelerate adoption of the new platform, build business models for new technology and drive new innovation (Alter et al. 2010).As Pitt et al. (1995, p. 175) suggest, "If IS researchers disregard service quality, they may gain an inaccurate reading of overall IS effectiveness. We propose that service quality should be included in the researcher's armory of measures of IS effectiveness". This behavioral perspective helps the IS field to capture the critical dimensions of a technology-mediated service by focusing on both front stage and back stage (Akter et al. 2010; Sousa & Voss 2006). It is widely believed that this growth of the service-oriented paradigm yields many opportunities for IS researchers to investigate the complex interaction between human behavior and IT (Rai & Sambamurthy 2006). 'Viewing a system as a service' can help IT organizations to align their interests with the services economy by modeling service quality dynamics (Alter 2010; Maglio et al. 2009).

Researchers in service systems consider quality as the single most important determinant of businesses' long-term success (Alter 2010). Despite the importance of quality in service systems, there is a paucity of research that explores the antecedents to and consequence of service quality in this domain (Jia et al. 2008). Thus, there is a growing need to reframe and

refocus service quality in IS in order to manage the critical outcomes of service systems (Alter 2010, Bardhan et al. 2010; Ostrom et al. 2010; Vargo & Lusch 2008).

However, the service system approach is struggling to develop meaningful consumer-oriented quality assessment measures and their association with service outcomes. According to Bardhan et al. (2010, p. 6), "[t]he deployment of IS and technology by firms increasingly determines their competitiveness in the service economy. In this milieu, there is a corresponding need to apply robust research findings in the appropriate managerial and organizational contexts on services innovation, quality, architecture, and design and delivery, as well as the customer satisfaction and business value that results." It is noteworthy that growing IT services (mostly data) including Internet search, mobile ticketing, digital wallet or mobile health are transforming organizations by enhancing service quality and innovation. As such, there is a research call to encourage both researchers and practitioners to focus on *quality* as a core concept within the IT discipline (Jia et al. 2008; Nelson et al. 2005; Pitt et al. 1995).

In order to recognize the critical role of service quality in IS, researchers (e.g., Jiang et al. 2000, 2002; Kettinger & Lee 1994, 1995, 1999; Ketler & Walstrom 1993; Pitt et al. 1995, 1997; Ma et al. 2005; Watson et al. 1998) have initially adopted SERVQUAL to measure IS service performance. But they faced huge challenges because of the reliability and validity of the generic SERVQUAL measures and lack of IT artifact in the IS context (Orlikowski & Iacono 2001; Van Dyke et al. 1997; 1999). Critics in IS, for example, Van Dyke et al. (1997), highlight that confusion of SERVQUAL's expectation component and its difference score measurement approach make the model perform poorly in establishing discriminant validity for the five dimensions. Although such studies have been important in explaining IT usage, they are relatively weak in capturing human–technology interactions and provide limited guidance for system designers (Nelson et al. 2005). Orlikowski and Iacono (2001) have highlighted that such IT research, which employs a "proxy view" of technology, has lost its connection to the field's core subject matter—the IT artifact itself. Besides, some researchers found that when applying the SERVQUAL model to e-services' collapse, most dimensions lose their reliability and validity (e.g., Gefen 2002). Overall, the extant literature on the SERVQUAL model in IS did not focus on human–technology interaction (system quality), interpersonal interaction and outcome (or information) benefits separately to measure overall IS service quality.

Addressing the above mentioned concerns, Nelson et al. (2005) presented a model which puts forward two basic dimensions of IS, that is, systems quality (service delivery platform) and information quality (output of an information system) in order to establish an IT artifact in the IS quality literature (Table 3.3). They identified altogether nine fundamental dimensions of which five are for systems quality and four are for information quality. They applied the model

over data warehousing in health care to predict information quality and system quality separately (Akhter, 2012).

Table 2.5 Nelson et al.'s IT quality model (2005) (Adapted from Akhter, 2012)

System Quality	***Indicators***	***Definitions***
Systems Reliability	Service accuracy, availability and consistency.	The degree to which a system is dependable over time.
Systems Efficiency	Ease of use, access and speed of response.	The degree to which a system provides easy and quick access.
Systems Flexibility	Ability to meet different needs.	The degree to which a system can adapt to a variety of user needs.
Systems Privacy	Information protection and sharing.	The degree to which the site is safe and protects user information.
Systems Integration	Seamless service across live or automated voice or SMS.	The degree to which a system facilitates the combination of information from various sources to support decisions.
Information Quality	***Indicators***	***Definitions***
Accuracy	Correct, unambiguous, meaningful, believable and consistent.	The degree to which information is correct, unambiguous, meaningful, believable and consistent.
Completeness	Information adequacy.	The degree to which all possible states relevant to the user population are represented in the stored information.
Currency	Currency of information.	The degree to which information is up-to-date.
Format	Comprehensive and easy to understand.	The degree to which information is presented in a manner that is understandable and interpretable to the user and thus aids in decision making.

However, this research was conducted within the specific domain of data warehousing, so the authors expressed their concern about whether the findings could be applied more broadly or to other specific forms of technology. As such, the authors suggested a context-specific conceptualization of system and information quality to better define the IT quality model. Furthermore, their study was not based on ultimate users' perceptions to capture service quality dimensions in IS.

Similarly, DeLone and McLean (1992, 2003) developed the taxonomy of IS success theory based upon Mason's modification of Shannon and Weaver's model (Shannon & Weaver 1949) of communications. DeLone and McLean developed their initial taxonomy using established theories of communication adapted to IS (Petter & McLean 2009). In the revised model (2003), they incorporated service quality and merged individual impact and organizational impact into net benefits to address the needs of greater benefits. They also felt that it is necessary to measure user satisfaction and its impact on intention to use (an attitude) due to the changing nature of IS and their contexts. As a result, DeLone and McLean (2003) combined systems quality, information quality and service quality in their updated model to measure overall IS performance. They argued that IS organizations now play the dual role of 'information provider' and 'service provider' so "service quality" should be added as an important dimension (in addition to systems quality and information quality) to measure overall IS performance (DeLone & McLean 2003). However, empirical validation of the modified IS success model has failed to present clear guidelines on specific quality parameters (Petter & McLean 2009) and, thus, suggested context specific conceptualizations of quality dimensions. Moreover, there are at least two groups of stakeholders in any IS service − staff and users. Whereas staff's perceptions are based on performance and learning experiences, users' perceptions are based on how well their needs are satisfied. DeLone and McLean did not draw a boundary line between these two different perceptions in developing their success model (Jiang et al. 2001). In most cases, the IS success model including the service quality dimension has been used to measure staff's perceptions, such as Sedera et al.'s (2004) replication of the IS success model on enterprise systems. Overall, there is a paucity of research that focuses on users' perceptions to evaluate service quality (Petter & McLean et al. 2009).

In the case of mobile information services, Chae et al. (2002) developed a quality model focusing on the characteristics of a generic mobile platform. They identified four primary quality dimensions and these were connection quality, content quality, interaction quality and contextual quality. In order to address these dimensions, they developed sub dimensions, such as, stability and responsiveness to address connection quality; objectivity, believability and amount to address content quality; structure, navigation and presentation to address interaction quality and finally, timeliness and promptness to address contextual quality. In

another study on mobile Internet acceptance, Cheong and Park (2005) developed two quality constructs, the system quality and content quality, in their research model based on DeLone and McLean's (2001) original success model.

Subsequently, Tan et al. (2008) proposed multiple quality dimensions (perceived usefulness, perceived ease of use, content, variety, feedback, experimentation and personalization) as constructs to measure the overall quality of mobile entertainment and information service. However, these studies are very much context-specific and do not generalize the dimensions in all other settings. Koivisto (2007) commented that the models of mobile IS of the above mentioned models ignored two important components; the quality of a mobile device and mobile network. So he offered a model capturing the quality perception of a mobile device, a mobile network and the information service and he suggested that, "the overall quality is a combination of all three that together form the mobile service supply chain." This model has focused on both product and service quality and formulated a quality model on expectation and perception dimensions.

Table 2.6 DeLone & McLean's IS success model (adapted from Petter & McLean 2009)

Construct	***Indicators***	***Definitions***
System Quality	Availability, adaptability, reliability, usability, response time	Performance of the IS in terms of reliability, convenience, ease of use, functionality and other system metrics
Information Quality	Completeness, ease of understanding, relevance, personalization, security	Characteristics of the output offered by the IS, such as accuracy, timeliness and completeness
Service Quality	Responsiveness, assurance and empathy	Support of users by the IS department, often measured by the responsiveness, reliability and empathy of the support organization
User Satisfaction	Repeat purchase, repeat visits, user surveys	Approval or likeability of an IS and its output
Intention to Use	Reuse, repeat purchase, etc.	Expected future consumption of an IS or its Output
Use	Nature of use, navigation, number of site visits, number of transactions	Use consumption of an IS or its output described in terms of actual or self-reported usage
Net Benefits	Cost savings, time savings, etc	The effect of an IS on an individual, group, organization, industry, society, etc., which is often measured in terms of organizational performance, perceived usefulness and effect on work practices.

Service quality theories in a web-based electronic service strongly influence mobile service because in both cases, services are delivered over an electronic platform. Several powerful models have been developed to address the issues of service quality over this platform, such as, eQUAL (Barnes & Vidgen 2001), web quality (Aladwani & Palvia 2002), E-S-QUAL (Parasuraman et al. 2005), eTailQ (Caruana & Ewing 2006; Long & Mellon 2004; Wolfinbarger & Gilly 2003), perceived service quality in the web (Yang et al. 2004), WebQual (Loiacono et al. 2007) and service quality in general portals (Liu et al. 2009).

Barnes and Vidgen (2001) presented three dimensions to measure the quality of a web-based electronic platform (information quality, interaction and service quality and usability) which was followed by Janda et al.'s (2002) five quality dimensions, that is, performance, access, security, sensation and information and Collier and Bienstock's (2003) three quality dimensions, that is, process quality, information quality and recovery quality to measure the service quality of the electronic platform. However, all these models have been seriously criticized for not defining electronic services broadly, missing some core dimensions and generalizing the models across all electronic service settings (Fassnacht & Koese 2006).

In order to overcome the pitfalls of the earlier models, Parasuraman et al. (2005) developed the E-S-QUAL or electronic service quality model (see Table 3.5) to measure service quality of web-based electronic services. The uniqueness of the E-S-QUAL model lies in its capacity to capture perceptions on human–technology interaction for any web-based e-service platform (Sousa & Voss 2006).

Table 2.7 E-S-QUAL model (adapted from Parasuraman et al. 2005)

Dimensions	**Sub dimensions**	**Definition**
Core dimension	Efficiency	Ease of use and speed of response time
	Systems availability	Technical function capacity
	Fulfilment	Fulfilment of promises
	Privacy	Security and protection of customer information
Service Recovery	Responsiveness	Problems' handling efficiency in service failure
	Compensation	Degree of compensation in service failure
	Contact	Interactive assistance through online or telephone

Similarly, Fassnacht and Koese (2006) introduced quite a broad model by focusing on online electronic networks. They proposed to measure service quality through environment quality,

delivery quality and information quality. However, this model did not address the unique characteristics of the mobile platform (e.g., network quality, interaction quality, etc.) and it was again restricted to measuring service quality of all web-related services. Most web-based electronic service quality studies are primarily based on front office (i.e., quality of interaction between the end-user and the virtual platform) although service quality failures are frequently related to back office operations (i.e., information systems). Since overall customer satisfaction is strongly influenced by service quality at all moments of contact (Shaw & Ivens 2002), some researchers (e.g., Sousa & Voss 2006) integrated both front office and back office operations in evaluating service quality. In this case, Sousa and Voss (2006) proposed a powerful service quality model focusing on systems quality, interpersonal quality and interaction quality to measure any service which contains both electronic (e.g., mobile channel) and physical components (service provided by persons). Therefore, they proposed the dimensions of the E-SQUAL model (Parasuraman et al. 2005) to measure systems quality and the SERVQUAL model (Parasuraman 1985, 1988) to measure interpersonal interaction quality for any service over an electronic platform (see Table 3.6). However, Sousa and Voss's (2006) conceptual model was not empirically tested and, again, it was proposed as a generic model for all electronic services ignoring the contextual influence of service quality settings.

Table 2.8 Service quality for virtual channels (adapted from Sousa & Voss 2006)

Dimensions	Sub dimensions	Theories
Systems Quality	Efficiency	E-S-QUAL Model (Parasuraman et al. 2005)
	Systems availability	
	Fulfilment	
	Privacy	
Interaction Quality	Responsiveness	SERVQUAL Model (Parasuraman et al. 1988); cf. (DeLone & McLean 2003)
	Assurance	
	Empathy	

2.6.6 Findings and Gaps:

Akhter, 2012 described that, "Synthesis of the literature in IS and electronic services brings some overlapping dimensions of service quality in the IS context to measure users' perceptions (see Table 3.7). Most studies focus on *systems quality* to measure performance of the overall service delivery platform, *interaction quality* to measure user interactions with providers and *information* or *outcome quality* to measure the quality of overall service benefits. In addition, DeLone and McLean (2003) emphasized the role of *contexts* in conceptualizing and measuring any model. In this regard, they confirmed Seddon's (1992) opinion that no single model is absolutely better than another, so conceptualization and measurement of variables are often influenced by the *context and objective* of the study. Also, Jiang and Klein (1999) found that users prefer different quality measures, depending on the type of system being measured. In this viewpoint and above mentioned literature review the researcher in this study wants to conclude that, firstly there is no such theory of measurement of system delivery, interpersonal communication, outcome quality and at the same time its impact on continuation intention in a technology impacted platform. Also, in relation to this Net Promotion Tendency has not been yet developed.

Secondly, there is hardly any evidence of particular scale used to measure Service Quality. This has created an impact on the above mentioned area on Mobile telecom service platform.

The following table (Table 2.9) describes the core service quality theory in Information Systems and has identified research gaps in this particular area.

Table2.9: Core Service Quality Theory in Information System (Adapted from Akhter, 2012)

Discipline	Theory	Dimensions	Findings
Information Systems	SERVQUAL+ (Kettinger & Lee (1994, 1997, 2005)	Reliability, responsiveness, assurance and empathy	Services quality varies under desired level, adequate level and minimum level.
	SERVQUAL in IS (Jiang et al. 2000; Pitt et al. 1995, 1997)	Reliability, responsiveness, assurance, empathy	SERVQUAL model can effectively be used to measure IS service quality or success.
	IT Quality Model (Nelson et al. 2005)	System quality and information quality	Quality dimensions have been determined with IT artifact in mind.
	IS Success Model (DeLone & McLean 2003)	Service qualityhas been proposed as a separate dimension in addition to system quality and information quality	This theory is based on three primary dimensions of quality to measure service performance of IS.
	Quality dimensions in IS (Wixom & Todd 2005)	IT quality is framed as system quality and information quality	Quality, satisfaction and future use intentions are related.
Internet based Electronic Services	E-S-QUAL (Parasuraman et al. 2005)	*Core dimension:* systems efficiency, systems availability, fulfilment and privacy. *Recovery dimensions:* responsiveness, compensation and contact.	A general service quality model for Internet users with online shopping.
	Service quality of virtual platform (Sousa & Voss 2006)	Virtual quality (systems efficiency, systems availability,systems reliability and privacy): interaction quality is measured by SERVQUAL model and integration quality(channel service configuration & integrated interaction.	In addition to front office (interaction quality), quality of virtual back office (systems quality) is important to evaluate service quality.
Mobile Information Service	(Chae et al. 2002)	Connection, content, interaction and contextual quality	In this case, researchers focus on quality of mobile network, interaction and information quality to measure any service through mobile platform.
	(Tan & Chou 2008)	Perceived usefulness, perceived ease of use, content,variety, feedback, experimentation and personalization	Conceptualized quality of mobile information services under mobile Internet settings.

Overall Gap: 1. There is no such theory of measurement of system delivery, interpersonal communication, outcome quality and the same time its impact on continuation intention in a technology impacted platform. Also, in relation to this Net Promotion Tendency has not been yet developed.

2. There is hardly any evidence of particular scale used to measure Service Quality and its impact on the above mentioned area on Mobile telecom service platform.

2.6.7 Service Quality studies in the Mobile Telecommunication Industry:

In mobile telecommunication literature, service quality has been conceptualized in different ways. Some of the researchers measured mobile service quality as customers‟ overall evaluation of their experience with the service provider, and did not consider it as a multidimensional construct (Akroush et al., 2011; Aydin & Özer, 2005; Edward et al., 2010; Liu et al., 2011; Shin & Kim, 2008; Lai et al., 2009). Nonetheless, most researchers considered mobile service quality as a multidimensional concept. However, the number and content of these dimensions are different across studies. Some of them used and adapted generic models like SERVQUAL to measure mobile service quality (Boohene & Agyapong, 2011; Leisen & Vance, 2001; Negi, 2009; Wang & Lo, 2002), Moreover, SERVQUAL or SERVPERF, as very general instruments, are inadequate to measure mobile service qualities in making satisfactory service related decisions because the dimensions of service quality depend on the type of service offered (Babakus & Boller, 1992). For example, Wang and Lo (2002) employed a modified version of SERVQUAL model to measure service quality of mobile phone operators in China. They added network quality dimension to the model based on focus group discussions and expert opinions. According to their findings based on structural equation modeling, the most important service quality dimensions in predicting customers overall satisfaction was assurance, followed by reliability and network quality. But they found no evidence to support the influence of responsiveness and empathy on customer satisfaction (Wang & Lo, 2002).

Similarly, Negi (2009) tried to modify SERVQUAL scale to best fit in the context of mobile telecommunication market in Ethiopia. In a pilot study, respondents were asked about additional service quality dimensions by using open-ended questions. Three additional dimensions were derived including network quality, compliant handling and service convenience. According to regression analysis, network quality scored the highest in predicting overall customer satisfaction followed by reliability, empathy and assurance (Negi, 2009).

Some researches in mobile telecommunication industry extended the traditional definition of service quality and incorporated aspects particularly relevant to mobile services. For example, Eshghi et al. (2008) used literature review to identify thirty two attributes relevant to mobile telecommunication industry. Six factors were derived using factor analysis including relational quality, competitiveness, reliability, reputation, customer support and transmission quality.

These factors were taken as service quality dimensions. Based on regression analysis, competitiveness and reliability had the greatest effect on customer satisfaction followed by relational quality and transmission quality. Also, a regression analysis was done to identify the most important service quality dimensions in predicting repurchase intension of customers. Results indicated that relational quality and reliability are the most determinant factors in customers‟ purchase decisions (Eshghi et al., 2008).

In another study on the perceptions of mobile phone operators service quality, Santouridis and Trivellas (2010) suggested that customers evaluate service quality of their mobile phone operators based on the quality of six dimensions including network, value-added services, mobile devices, customer service, pricing structure and billing system. This scale was administered to two hundred five residential non-business mobile phone users in Greece. Their findings show that customer service, pricing structure and billing system are the service quality dimensions that have the most significant positive effect on customer satisfaction, which in turn have significant positive impact on customer loyalty (Santouridis & Trivellas, 2010).

Moreover, Lu et al. (2009) developed a multidimensional and hierarchical model to measure mobile service quality. They proposed that mobile service quality was composed of three primary dimensions, which are interaction quality, environment quality and outcome quality. Each primary dimension further included sub-dimensions. An instrument was developed and empirically tested using data collected from four hundred thirty eight mobile brokerage service users (Lu et al., 2009). Also recently, Zhao et al. (2012) used this model to assess the effect of mobile telecommunication service quality on customer satisfaction and the continuance intention of mobile value-added services. Their findings showed that all three dimensions of service quality have significant and positive effect on customer's satisfaction and continuance intention (Zhao et al., 2012).

Lai et al. (2009) note that little research has been done to improve understanding of the relationships that exist between important marketing constructs such as service quality, customer satisfaction, customer perceived value, corporate image, and customer loyalty in China. In addition, the authors note that most of the previous research on services examines the relationships between these important constructs in a western cultural context. Therefore, Lai et al. (2009) develop and test an integrative model to examine the relationships between the higher order constructs: service quality, customer satisfaction, customer perceived value, corporate image and customer loyalty in the Chinese telecommunications market. The research sample was drawn from customers of a Chinese mobile communications company. Lai et al. (2009) use five items that are derived from the five dimensions of SERVQUAL to measure customers‘ perceptions of service quality. These items measure customers‘ perceptions of

service performance only. Lai et al.'s (2009) findings reveal that service quality is an important determinant of customer perceived value and corporate image in the Chinese mobile communications market.

Many other researches were reviewed and mobile telecommunication service quality dimensions which can be evaluated by customers in their decision making have been identified. Hosseini et al.(2013) summarizes some identified core dimensions along with their respective sources in a literature, which are given in table 1.

2.6.8 Studies on Bangladesh Mobile Telecommunication Sector Service Quality:

A review on the literature based on service quality in the context of Bangladesh mobile telecom sector reveals that very few works have been done in this area. Particularly, the researcher found no major study based on the context which actually identifies the relationship between service quality and its impact on customer satisfaction and continuation intention. However, some groundwork has been conducted like measuring the service quality (Yadav, 2013) , survey study based on users' attitude towards mobile phone internet (Bhuyia et al, 2009), customer satisfaction in the mobile phone industry in Bangladesh (Alam et al, 2007) etc. and they have identified some predominant factors which might influence service quality.

Uddin & Akhter, (2012) described on their study that, service quality and fair price have indirect influence on customer satisfaction of a mass service industry (i.e) mobile phone operators through perceived value. Perceived value has mediating role between quality, charge fairness and satisfaction, whereas, the results did not find any direct significant impact of service quality on customer satisfaction. In that study, the authors identified that fair price has a significant direct impact on customer satisfaction and an indirect influence on customer satisfaction through perceived value.

Alam et al. (2007) finds that, customer service increases the total consumer satisfaction more than any other variable. They concluded that, most consumers expect the connection to work without trouble, however, when there is a problem, they expect the problem to be solved efficiently and effectively. They have also found the following latent variables related to customer service, that is; interconnectivity, features and options and waiting time.

Table 2.10: Mobile telecommunication service quality dimensions based on literature review (adapted from Hosseini et al, 2013)

Dimensions	Researches
Network Quality	Wang and Lo (2002); M. K. Kim et al. (2004); H. S. Kim & Yoon (2004); Kassim (2006); Lim et al. (2006); Eshghi (2008); Ling & De Run (2009); Negi (2009); Pezeshki, Mousavi & Grant (2009); Santouridis & Trivellas (2010); Wong (2010); Gunjan et al. (2011); Gautam (2011); Liang, Ma & Qi (2012)
Value-added Services	M. K. Kim et al. (2004); H. S. Kim & Yoon (2004); Lim et al. (2006); Santouridis & Trivellas (2010); Gunjan et al. (2011); Jahanzeb, Fatima & Khan (2011)
Pricing Plans	M. K. Kim et al. (2004); Lim et al. (2006); Ling & De Run (2009); Santouridis & Trivellas (2010); Gunjan et al. (2011)
Employees Competency	Eshghi et al. (2008); Krishnan & Kothari (2008); Jahanzeb et al. (2011)
Billing System	Lim et al. (2006); Krishnan & Kothari (2008); Pezeshki et al. (2009); Santouridis & Trivellas (2010)
Customer Service	H. S. Kim & Yoon (2004); M. K. Kim et al. (2004); Lim et al. (2006); Kassim (2006); Pezeshki et al. (2009); Negi (2009); Negi & Ketema (2010); Y. E. Kim & Lee (2010); Santouridis & Trivellas (2010); Gautam (2011); Gunjan et al. (2011); Jahanzeb et al. (2011); Khaligh, Miremadi & Aminilari (2012)
Convenience	M. K. Kim et al. (2004); Ling & De Run (2009); Negi (2009); Liang et al. (2012)

Bhuyian et al. (2009) described that, " Most current mobile phones connect to a cellular phone network of base stations which is in turn interconnected to the Public Switched Telephone Network (PSTN) (the exception are satellite phones). Mobile internet, which is a combination of the internet with mobile devices, is becoming increasingly popular. Mobile internet is primarily different from stationary internet in that it may be used in various contexts, whereas stationary internet is mostly used in predetermined environments. With the introduction of 3G technologies in Bangladesh mobile internet users will increase tremendously. It is needed to be mentioned that 3G technology was introduced in Bangladesh, mobile phone arena by Teletalk on 14 October, 2012, and it elevated the service dimension of mobile telecommunication industry to a new era.

Very little study in the academic field has been found in the service quality area in Bangladesh mobile telecommunication area from a practical point of view. The researcher of this study has

tried tremendously to find out the original work related to this and found a serious lacking in this segment.

2.6.9 Association of Service Quality, Customer satisfaction, Continuance intention and Promotion:

"Companies increasingly look to quality, satisfaction, and loyalty as keys to achieving market leadership. Understanding what drives these critical elements, how they are linked and how they contribute to your company's overall equity is fundamental to success." (AC Nielsen,2000).

The existing literature identifies that service quality is a context-specific, hierarchical and multidimensional construct (Brady & Cronin 2001; Dabholkar et al. 2000; Fassnacht & Koese 2006; Parasuraman et al. 2005), which has a strong association with individual (e.g., satisfaction), economic (e.g., continuance intentions) and social (e.g., quality of life) outcomes (Andaleeb 2001, 2008; Choi et al. 2007; Dagger & Sweeney 2006; Dagger et al. 2007). Akhter, (2012) described "These effects of service quality dynamics can be encapsulated under the cognitive-affective-conative framework of Oliver (1997, 1999) which begins with cognitive beliefs (e.g., perceived service quality evaluation), mediated by affective responses (e.g., evaluation of satisfaction) and ends with conative effects (e.g., continuance intentions) (Chaudhuri & Holbrook 2001; Dagger et al. 2007). "
So, this study provides a review of the service marketing literature regarding these important marketing constructs and the interrelationships between these constructs.

2.6.9.1 The Relationship between Service Quality and Customer Satisfaction

Cronin and Taylor (1992) suggest that there is confusion in the service marketing literature as to the relationship that exists between customer satisfaction and service quality. Two opposite views over the relationship exist in the service marketing literature. One suggests that a high level of customer satisfaction leads to a high level of perceived service quality (Bolton and Drew, 1991; Bitner, 1990), whereas the more accepted alternative view suggests that a high level of customer satisfaction results from a high level of perceived service quality (Clemes et al., 2007; Dagger et al., 2007; Fornell et al., 1996; Parasuraman et al., 1994; Cronin and Taylor, 1992).

Kim et al. (2004) examine the relationship that exists between customer perceived service quality and customer satisfaction in the Korean mobile communications market and demonstrate that customer perceived service quality has a positive impact on customer satisfaction. Similarly, Wang et al. (2004) examine the Chinese mobile communications market and demonstrate that customer perceived service quality positively impacts on customer satisfaction.

In addition to service quality, satisfaction has been instrumental in helping organizations to clarify objectives, define measures of performance and develop performance information systems (Andaleeb 2001). Oliver et al. (1997) specified satisfaction as an essential ingredient of success in the competitive business world. Owing to its strong effects on critical outcome constructs, Wirtz and Lee (2003) urged service providers to effectively manage satisfaction.

Akhter (2012) described that most of the published academic studies in the services sector have also looked at the link between service quality and satisfaction (e.g. Brady & Cronin 2001; Dabholkar et al. 1996, 2000; Kelley & Davis 1994; Oliver et al. 1997; Parasuraman et al. 1994; Zineldin 2006). Similarly, service quality has been correlated with satisfaction in seminal IS literature (e.g., Jiang et al. 2000, 2001; Nelson et al. 2005; Pitt et al. 1995). In this regard, Pitt et al. (1995, p. 174) mentioned that, "the principal reason IS departments measure user satisfaction is to improve the quality of service they provide … irrespective of whether a user interacts with one or multiple information systems, the quality of service can influence use and user satisfaction." DeLone and McLean (2003) in their revised model of IS success proposed a link between service quality and satisfaction in order to measure individual productivity.

Rai et al. (2002) observed that IS user satisfaction has a significant impact on IS use, that is, a higher level of satisfaction creates greater user dependence on the system. Zviran and Erlich (2003) in their meta-analysis on IS user satisfaction found that satisfaction is an important outcome variable to evaluate the performance of a system because of its critical effects on decision making and productivity benefits.

2.6.10 Relationship between Service Quality, Customer Satisfaction, Continuance Intention and Switching Barriers:

Continuance Intention: Akhter (2012) described that numerous studies have found both a direct relationship between service quality and satisfaction and an indirect relationship between service quality and intention to use through satisfaction (e.g., Cronin & Taylor 1992; Dabholkar et al. 2000; Gotlieb et al. 1994; Mahmood et al. 2000; Zviran & Erlich 2003). DeLone and McLean (2003) confirmed that service quality leads to satisfaction and an increased satisfaction leads to future intentions to use. They confirmed a strong relationship between service satisfaction and future use intentions through their meta-analysis. Rai et al. (2002), in their study to assess the validity of DeLone and McLean's (1992) and Seddon's (1997) IS success models found that IS user satisfaction impacts IS uses and a higher level of satisfaction creates greater user dependence on the system.

In mobile telecommunication services, satisfaction is generally associated more closely with behavorial intentions. Satisfaction is typically modeled as mediating the relationship between service quality and behavioral intentions (e.g., Anderson & Sullivan 1993; Brady & Robertson 2001; Cronin & Taylor 1992; Dabholkar et al. 2000; Gotlieb et al. 1994). Instead of behavioral intentions, this study has used the construct 'intention to continue using' which is defined as usage behavior, commonly labelled as post-implementation (Saga & Zmud 1994) or post-adoption (Jasperson et al. 2005). Whereas 'intention to use' is related to the initial adoption stage and considered a first step towards overall IS success, 'intention to continue using' focuses on how to promote continued IS use or how to reduce discontinuance (Limayem et al. 2007). In fact, in order to consider IS use a true success, a significant number of users should have moved beyond the initial adoption stage, using the IS on a continued basis. Bhattacherjee (2001, p. 351-352) confirms the importance of this construct by citing "long-term viability of an IS and its eventual success depend on its continued use rather than [its] first-time use." Thus, IS continuance, IS continuance behavior or IS continuous usage describes "behavioral patterns reflecting continued use of a particular IS which is a form of post adoption behavior" (Limayem et al. 2007, p. 707).

Hu et al. (2008) described that, "Continuance intention is defined as an individual's intention to continue using a service in the post-acceptance stage (Bhattacherjee, 2001). Intention is the ultimate dependent variable of interest in much information sciences and consumer behavior research (e.g. Jackson, Chow,&Leitch, 1997; Yi&La, 2004; Zeithaml et al., 1996).The accumulated empirical evidence converges to show intention to be a critical metric of the success of a newly implemented technology or the services it enables.

Moreover, Lu et al. (2009) developed a multidimensional and hierarchical model to measure mobile service quality. They proposed that mobile service quality was composed of three primary dimensions, which are interaction quality, environment quality and outcome quality. Each primary dimension further included sub-dimensions. An instrument was developed and empirically tested using data collected from four hundred thirty eight mobile brokerage service users (Lu et al., 2009). Also recently, Zhao et al. (2012) used this model to assess the effect of mobile telecommunication service quality on customer satisfaction and the continuance intention of mobile value-added services. Their findings showed that all three dimensions of service quality have significant and positive effects on customers' satisfaction and continuance intention (Zhao et al., 2012).

This study focuses on post-adoption which actually refers to a suite of behaviors that follow initial acceptance (Rogers 1995), including *continuance, routinization, infusion, adaptation, assimilation*, etc., which is often used as a synonym for continuance in the literature

(Karahanna et al. 1999). Previous IS research is based on the implicit assumption that IS usage is mainly determined by 'intention to use' (in the case of initial adoption); however, this assumption may not be applicable to continued IS usage behavior (Limayem et al. 2007), such as, continued usage of mobile telecom services, Because of lack of knowledge in this area (Saga & Zmud 1994), researchers have started exploring this area in more detail (Bhattacherjee 1998; Bhattacherjee 2001, Jasperson et al. 2005; Karahanna et al. 1999; Limayem et al. 2007). Service quality has been linked to satisfaction and behavioral intentions in the mobile telecom context (Wang & Yang 2004); Service quality perceptions and continuance intention in mobile banking context (G. Kumar & Ravindran , 2012); however, there are few studies which have clearly modeled both the direct and indirect impact of service quality on continuance intentions through satisfaction.

Switching Barriers : Recently, marketing research began to pay more attention to the influence of switching barriers which refer to any factor, making it difficult or costly for customers to change service providers (e.g., Burnham et al. 2003; Huang et al. 2007; Jones et al. 2000; Liu et al. 2005; Ranaweera and Prabhu 2003; Yim et al. 2007). These studies found that with the exception of customer satisfaction and service quality, switching barriers also play a key role in explaining customer behavioral intentions. Furthermore, some researchers even indicate the superiority of switching barriers over satisfaction and service quality. For example, Jones et al. (2000) note the role that switching barriers plays in potentially fostering greater customer retention and helping companies to weather short-term fluctuations in service quality that might otherwise result in defection. Research also finds that switching barriers explain more of the variation in repurchasing behavior than satisfaction (Burnham et al. 2003; Patterson and Smith 2003). This may be because customers often face a considerable risk in switching to an alternate service provider because it is difficult to evaluate a service before actually purchasing it (Sharma and Patterson 2000). Therefore, no matter how dissatisfied a customer is, he/she would still maintain a relationship with the service provide to avoid exit costs (Huang et al. 2007). Comprehensively, switching barriers should be taken to form a more complete framework for studying customers' behavioral intentions.

When switching barriers was studied in previous research, switching costs (e.g., Burnham et al. 2003; Jones et al. 2000; Liu et al. 2005; Patterson and Smith 2003) and alternative attractiveness (e.g., Huang et al. 2007; Sharma and Patterson 2000; Wathne et al. 2001; Yim et al. 2007) were two elements that were the most adopted. Switching costs refer to customers' perceived costs of switching from the existing provider to a new provider (Wathne et al. 2001). When customers wish to switch to other service providers, they may need to terminate a current relationship with the current provider while also searching for a feasible new provider.

Thus, customers will lose some sunk costs, which represent the customers' perception of the non-recoupable money, time and emotional effort involved in establishing and maintaining a friendly, quasi-social relationship with a service provider (Burnham et al. 2003; Patterson and Smith 2003). Customers will also incur additional costs—such as ''search costs''—in searching for an alternative service provider. These costs refer to the effort, time, and money that would be involved in searching for an acceptable, alternative service provider (Burnham et al. 2003; Jones et al. 2000; Sharma and Patterson 2000). Abundant research results show that as the switching costs of an activity increase, the likelihood of customers engaging in such behavior diminishes while the likelihood that they are ''locked'' in a relationship with the incumbent service provider increases (Burnham et al. 2003; Jones et al. 2000; Liu et al. 2005; Patterson and Smith 2003).

In an recent article Malhotra and Malhotra (2013) stated that, in the mobile services industry specifically, it has been shown that service quality impacts customer satisfaction and loyalty through both economic and emotional factors (Lim et al., 2006). Thus, with such low service quality perceptions, it is not surprising to see high switching intentions (Shin and Kim, 2008) as well as high switching activity in both developed as well as developing economies (Rahman and Azhar, 2011). As many as 10 percent of customers surveyed recently stated that they plan to switch providers within 90 days, a number that is at the highest level in the last 18 months (Carton, 2011). Several factors that lead to *switching have been identified, including pricing, inconvenience, core service failure, service encounter failure, response to service failure, competition, ethical problems, and involuntary switching* (Keaveney, 1995). In the mobile services industry, poor technical reliability and weakening competitive positioning as an innovator (e.g. AT&T is no longer going to be the exclusive iPhone provider) have been shown to be instrumental in the increase in customers' switching propensity (Carton, 2011).
Therefore, in this study the researcher wants to see that whether switching costs are positively associated with customers continuance intention or not in the context of mobile telephony in Bangladesh.

Gap: ***There is a dearth of research in mobile telecom industries overall which has established the direct linkage between service quality and intention to continue using, and indirect linkage between service quality and intention to continue using through satisfaction. Also, the effect of service quality on customer's switching behavior is hardly investigated.***

2.7 Overall Gaps in the Literature

The review of the literature evidently indicates that there is a scarcity of research in the context of service quality dynamics in the mobile telephony service systems in developing countries. In this regard, Walsham et al. (2007, p, 317) mention that, "despite the importance of the topic area of information systems in developing countries, the literature to date is relatively sparse". Specifically, there is no empirically-tested service quality model for the emerging telecom sectors in the Bangladesh platform which is applicable across all contexts. As such, there are some clear research gaps in the context of service quality in the mobile telecom area and its association with critical service outcomes in terms of conceptual models, reliable and valid instruments, representative sampling and generalizable findings. There were hardly any literature found which has written for the Bangladesh perspective that touched on those above mentioned area. These voids offers significant contribution to the knowledge advancement in this area. This study also intends to get noticeable attention for its unique contribution in this field considering the importance of the subject matter in both theory and practice. The researcher also believes that this study will help the executives and decision makers in Bangladesh mobile telecom sectors for future strategy making.

Major Gaps: ***There is no study which has investigated the relationship between service quality and its impact on service satisfaction, continuance intention and switching cost in the context of mobile telecom sectors in a developing country like Bangladesh.***

Specific Gaps:

1. Association between service quality, satisfaction and intention to continue using in the mobile telecom sector has not been established yet.

2. No random sampling-based study from an actual user base has been conducted in the mobile telecom context in a developing country.

3.There is hardly any research done on the effect of service quality on customers' switching behavior in the context of mobile telecom sectors in a developing country, particularly in Bangladesh.

4. No general findings are available in this field in the context of Bangladesh on the above mentioned issues.

2.8 Chapter Summary

The Objective of this chapter was to explore the nature, characteristics, roles, opportunities and challenges of service quality theories particularly in IS in the context of developing countries like Bangladesh. A review of the literature found that studies in this area are largely subjective and lacks continuity. Recently, service quality has received a greater attention and identified as the major challenge for developing country context platform; however a very little study has practically conducted in this context, especially in the mobile telecommunication platform. This chapter has evidenced frequent research calls to explore the existing service quality theories from an interdisciplinary perspective in order to identify the relevant research gaps with regard to the components and consequences of service quality in the context of Bangladesh mobile telecommunication sector.

Chapter 3

An Overview of the Bangladesh Mobile Telecom Sector

3.1 Overview:

The mobile telecommunication sector in Bangladesh has done tremendously well in the past decades. The history of the mobile telecommunication sector is not very new. Its structural and institutional reforms and huge population has provided incredible growth to this sector. Mobile phone services are the fast growing services in telecommunication industry in Bangladesh. According to a report published by IFC, they predicted that, "By 2017, unique mobile subscribers should surpass 82 million and mobile penetration should peak over 50%." In the last ten years, the mobile revolution has truly changed the socio-economic landscape of the country and played a pivotal role in the growth and development of the economy. *Mobile-Agriculture, Mobile-Health, Mobile-banking,* these concepts have really made a positive and significant contribution and changes the quality of life of the people in this country who belong mostly in the bottom of the pyramid line. The first section 4.2, discusses a brief overview of the history of the mobile telecom sector in Bangladesh. The next section 4.3 describes the characteristics including the development and regulatory environment of the mobile telecom sector in Bangladesh. Section 4.4 highlights the growth drivers, Section 4.5 explores the FDI investments in Bangladesh Telecom. The next section 4.6 discusses the issues of licensing 3G spectrums: what it is, licensing, opportunities and challenges. Section 4.7 describes an overview of the different mobile operators in Bangladesh. The next Section 4.8 describes different service quality measurement parameters by the different operators in general. The last section 4.8 presents the challenges and opportunities of the mobile telecom sector in Bangladesh.

3.2 History of the mobile telecom sector in Bangladesh:

The telecommunication services in Bangladesh were provided until 1989 by the state-owned monopoly provider Bangladesh Telegraph and Telephone Board (BTTB), telecommunications services. In 1989, the Government of Bangladesh opened the telecom sector by awarding licenses to two operators; one to operate fixed telephones in rural areas (Bangladesh Rural Telecom Authority); and the other to operate cellular mobile phone and pager (Bangladesh Telecom Ltd-BTL) services. In 1992, Pacific Bangladesh Telecom Limited (PBTL) bought the mobile part of the BTL (Khan 2003).In 1996; three more licences were issued to three mobile operators, namely Grameen Phone Ltd (GP), Aktel(presently Robi) and Sheba Telecom(Presently Banglalink) to provide mobile phone service. Citycell (Pacific Bangladesh Telecom Limited) is the first mobile phone operator of Bangladesh which, obtained a license in the name as Bangladesh Telecom Limited (BTL) to operate cellular, paging, and other wireless communication networks in 1989 and in 1990 a joint venture Hutchison Bangladesh Telecom

Limited (HBTL) was incorporated. Citycell started its commercial operation from 1993. Ministry of Posts and Telecommunications of Bangladesh in November 28, 1996 gave license to Grameenphone and in March 26, 1997 Grameenphone launched its service. Grameenphone has built the largest cellular network in the country and introduced the pre-paid service in September 1999. Telecom Malaysia International (Bangladesh) commenced its operation in 1997 under the brand name Aktel which is a joint venture company between Axiata Group Berhad, Malaysia and NTT DOCOMO INC, Japan. The company changed its brand name Aktel with the brand name Robi on 28th March, 2008. Under the Companies Act, 1994, Teletalk Bangladesh Limited (the "Company") was incorporated on 26 December, 2004 as a public limited company. Bangladesh Government sponsored the company.

In brief, the landmarks of telecommunication history are presented below (Source: www.btrc.gov.bd)

3.2.1 Landmarks in the history of telecom industry in Bangladesh:

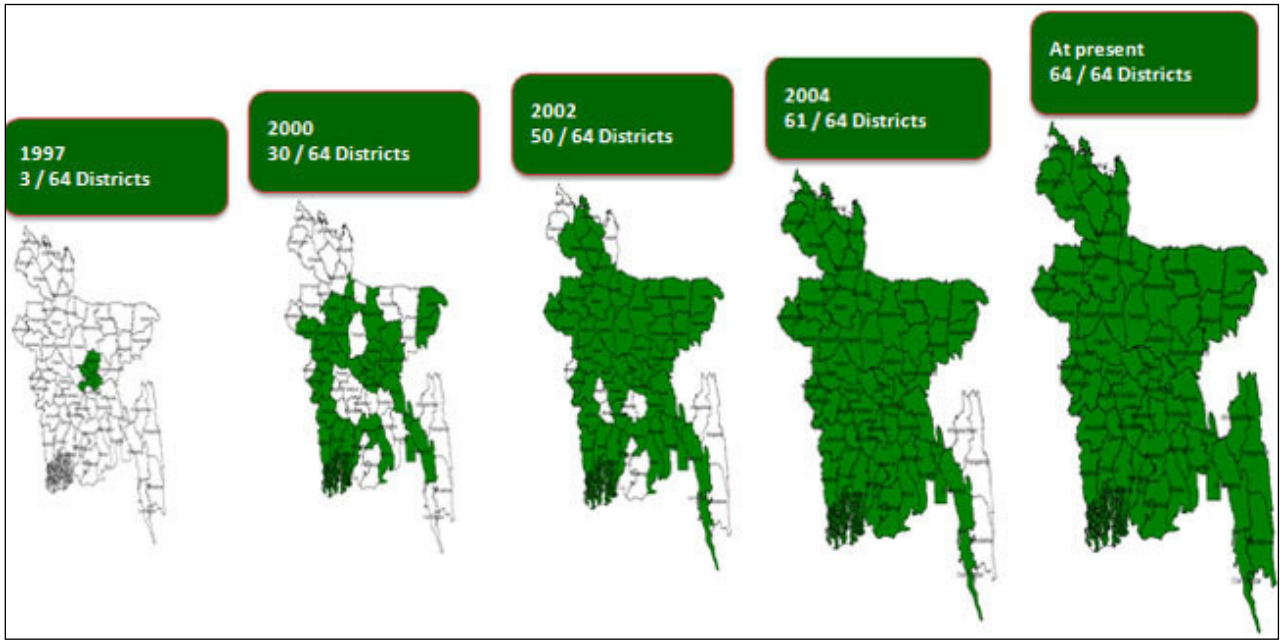
- Bangladesh Telegraph and Telephone (T&T) department was created in 1971.
- Sheba Telecom (Pvt) Ltd was granted a license in 1989 to operate cellular services in the rural areas of 199 upazilas.
- Pacific Bangladesh Telephone Ltd (1989) and Bangladesh Telecom (1989) received the mobile phone license.
- Grameenphone (1996) and Telephone Malaysia International Bangladesh (1996) were formed
- Bangladesh Telecommunication Regulatory Commission was formed in 2001
- Egypt based Orascom acquired Sheba Telecom in 2005
- Japanese NTT DoCoMO bought 30 percent stake in Aktel in 2008.
- Market largest telecom operator Grameenphone listed in capital market in late 2009
- Bharti Airtel acquired 70 percent stake in Warid Telecom in January 2010.

3.3 Characteristics of the Bangladesh mobile telecom market:

3.3.1 Development of the Bangladesh market:

Globalization, Liberalization and privatization are the three most spoken words in today's economy. These initiatives paved way for all round reforms and development for all round reforms in any sector, especially in developing countries, and that's exactly what we are experiencing in Bangladesh. Due to privatization and liberalization of policy telecommunication sector is experiencing phenomenal global change all over the world (Beard & Hartmann, 1999). The government and business sector have realized the fact that without the development of communication, Information and Technology, it's not possible to achieve the effective and efficient means of development. The growth of telecom sector in Bangladesh after 90's was phenomenal. In Bangladesh due to increase in the mobility and the emerging complex business environment people are moving from one place to another. Therefore, they want to talk with the connected people for taking the right decision at the right time during their movement. So in a country like Bangladesh where the land line is very hard to come by most of the consumers now a day's depend on cell phone to communicate with each other. Mobile or Cell phone is such a vehicle that made the communication easier even for the rural people as well. That is why the penetration rate of telephone in Bangladesh rose up to 540 percent between 1985 and 2000 (Lee, 2001). As per the BTRC info, July 2014, Bangladesh mobile telecom subscription rate has reached 116.871 million subscribers in total, which is approximately, 69.5 percents according to connections/100 citizen ratio. (Wikipedia.org)

Figure 3.1 Mobile Coverage expansion in Bangladesh. (Source: www.amtob.org.bd)



Bangladesh Telecommunication Regulatory Commission (BTRC) an independent Regulatory Commission established under the Bangladesh Telecommunication Act, 2001, (Act no18 of 2001) published by the parliament in the Bangladesh Gazette extraordinary in new on April 16, 2001. BTRC started his journey from 31st January 2002 to conduct the activities of the said act. With a initiation of its activates, necessary authority, responsibilities and related concern of the ministry of posts and Telecommunications were vested on to BTRC.

As per its monitoring policy, BTRC Publish regular update of mobile phone subscribers in Bangladesh. According to their last update, (July 2014) the total no. of mobile customer subscription rate is 116.871 million. The following page presents a chart describing the subscription rate by the operators (No. in millions).

Table 3.1: Percentage of active subscribers

Operators	Active Subscribers	%
Grameenphone Ltd. (GP)	49.482	42%
Banglalink Digital Communications Ltd	29.76	25%
Robi Axiata Limited (Robi)	24.214	21%
Airtel Bangladesh Limited (Airtel)	8.353	7%
Teletalk Bangladesh Ltd. (Teletalk)	3.67	3%
Pacific Bangladesh Telecom Limited (Citycell)	1.392	1%
Total	**116.871 (million)**	**100%**

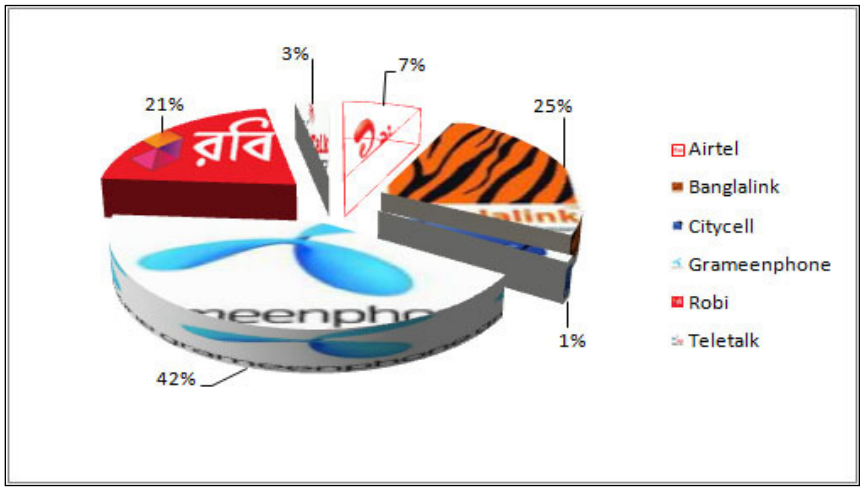


Figure: 3.2 Mobile phone operators market shares in Bangladesh.

Figure3.3: A timeline of the Evolution of Bangladesh Telecoms

3.3.2 Technology:

Global system for Mobile communication (GSM around 80-85 % market share) Code Division Multiple Access (CDMA, AROUND 10-15 % market share are two prevalent mobile communication technologies. Both technologies have to solve the same problem: to divide the finite Radio Frequency spectrum among multiple users. The telecom operators in Bangladesh primarily follows the GSM mobile system, the only exception is 'Citycell', but they are also planning to change their technology to GSM soon.

TDMA (Time Division Multiple Accesses—underlying technology used in GSM's G) does it by chopping up the channel into sequential time slices. Each user of the channel takes turns to transmit and receive signals. In reality, only one person is actually using the channel at a specific moment. This is analogous to time-sharing on a large computer server.

CDMA (Code Division Multiple Access—underlying technology used in GSM's 3G and IS-95's 2G) on the other hand, uses a special type of digital modulation called spread spectrum which spreads the voice data over a very wide channel in pseudorandom fashion. The receiver undoes the randomization to collect the bits together and produce the sound. For comparison, imagine a cocktail party, where couples are talking to each other in a single room. The room represents the available bandwidth. In GSM, a speaker takes turns talking to a listener. The speaker talks for a short time and then stops to let another pair talk. There is never more than one speaker talking in the room, no one has to worry about two conversations mixing. In CDMA, any speaker can talk at any time; however each uses a different language. Each listener can only understand the language of his or her partner. As more and more couples talk, the background noise (representing the noise floor) gets louder, but because of the difference in languages, conversations do not mix.

Advantages of GSM

- GSM is mature and has a more stable network with robust features.
- Less signal deterioration inside buildings.
- Talk time is generally higher in GSM phones due to the pulse nature of transmission.
- The availability of Subscriber Identity Modules allows users to switch networks and handsets at will.
- GSM covers virtually all parts of the world so international roaming is not a problem.
- The much bigger number of subscribers globally creates a better network effect for GSM handset makers, carriers and end users.

Disadvantages of 2G GSM

- Pulse nature of TDMA transmission used in 2G interferes with some electronics, especially certain audio amplifiers. 3G uses W-CDMA now.
- Intellectual property is concentrated among a few industry participants, creating barriers to entry for new entrants and limiting competition among phone manufacturers.
- GSM has a fixed maximum cell site range of 35 km, which is imposed by technical limitations.

Advantages of CDMA

- Capacity is CDMA's biggest asset. It can accommodate more users per MHz of bandwidth than any other technology.
- CDMA has no built-in limit to the number of concurrent users.
- CDMA consumes less power and covers large areas so cell size in CDMA is larger.
- CDMA is able to produce a reasonable call with lower signal (cell phone reception) levels. CDMA uses „soft handoff", reducing the likelihood of dropped calls.
- CDMA"s variable rate voice coders reduce the rate being transmitted when speaker is not talking, which allows the channel to be packed more efficiently.

Disadvantages of CDMA

- Most technologies are patented and must be licensed from Qualcomm.
- Breathing of base stations, where coverage area shrinks under load. As the number of subscribers using a particular site goes up, the range of that site goes down.
- CDMA may not perform well in hilly terrain because CDMA towers interfere with themselves; they are normally installed on much shorter towers.
- CDMA covers a smaller portion of the world, and CDMA phones are generally unable to roam internationally.

- Manufacturers are often hesitant to release CDMA devices due to the smaller market, so features are sometimes late in coming to CDMA devices.
- The phones are not portable across providers.

3.3.3 Regulatory environment of the Mobile industry in Bangladesh:

3.3.3.1 Overview of BTRC:

In order to facilitate a quick and stable socio-economic development and to provide a dependable telecommunication service, Bangladesh Telecommunication Regulatory Commission (BTRC) was established on 31 January 2002, under the Bangladesh Telecommunication Regulatory Act-2001. According to the website of BTRC, Its main objectives are:

(a) To encourage the orderly development of a telecommunication system that enhances and strengthens the social and economic welfare of Bangladesh;

(b) To ensure access to reliable, reasonably priced and modern telecommunication services including internet services for the greatest number of people, as far as practicable;

(c) To prevent and abolish discrimination in providing telecommunication services, to progressively effect reliance on competitive and market oriented system, and in keeping with these objectives, to ensure effective control of the Commission;

(d) To encourage the introduction of new services and to create a favorable atmosphere for the local and foreign investors who intend to invest in the telecommunication sector of Bangladesh;

(e) To ensure the efficiency of the national telecommunication system and its capability to compete in both the national and international sphere.

3.3.3.2 Telecommunication Regulatory Framework in Bangladesh:

Regulation is needed to promote the interests of consumers, and to facilitate the contribution of telecoms to the overall economy by reducing market inefficiencies and promoting competition. In an industry where scale matters and Operators often have significant market power, it requires third party's interest protection. Regulation is also needed to ensure that scale or any given advantages to the operators are not abused. Telecoms are heavily regulated not just because of the size of the industry, but also, because of the importance of telecom

services in the wider economy. The regulators are generally driven by the principles of increasing competition without restricting levels of investment.

Bangladesh Telecommunications Regulatory Commission [BTRC] was established on January 30, 2002 under the auspices of Bangladesh Telecommunication Act of 2001 to take over the regulatory functions from MoPT (Ministry of Posts and Telecommunciations). A prime objective of BTRC was to be its financial and administrative independence. Also the commission has been formulating different guidelines to ensure discipline in telecom sectors. BTRC also strongly encouraged and influenced the operators to ensure vivid CSR activities as per the provisions of the 2G renewal and 3G license giving procedure.

BTRC mainly operates their regulation to various telecom operators in two broad way, One is Fixed line telecom sector, and another is mobile telecom sector. In the mobile telecom sector their regulation is run mainly on these following areas:

1. **Market entry**: Mobile telecom market entry in Bangladesh is strictly controlled by the govt. of Bangladesh and BTRC. Some of the activities of BTRC in controlling the market entry and license renewal created some controversy. The first mobile license was issued to HBTL [later PBTL] in 1989 along with its fixed wireless license. No fee was levied on HBTL for the license and the process lacked any sort of transparency. With its acquisition of HBTL by PBTL 1991, it became and continued to be the only mobile operator in Bangladesh [with some 3,000 AMPS customers], when the market was opened for competition to 3 GSM operators in November 1996. These licenses were issued at no initial cost and selection was based on beauty-contest type marking scheme where the experience of the promoters and joint venture partners were evaluated.

   Two options were given for annual fees; one was an annual amount equal to 15 percent of the gross call revenue and connection fees, the second was an amount equal to the sum of USD 400,000 and 1 percent of gross call revenue and connection fees from year 0 to year 5, USD 800,000 and 1 percent of gross call revenue and connection fees from year 6 to year 10 and USD 1.2 million and 1 percent of gross call revenue and connection fees from year 11 to year 15. Network rollout obligations were also mandated for the new GSM operators, but no such obligations were stipulated for the incumbent AMPS operator. Competition was kicked-off in the mobile market with such fundamental disparity between the incumbent and new licenses. With these new licenses, GrameenPhone and TMIB [Aktel] launched its GSM services in 1997, Sheba launched its GSM services in 1998 and PBTL, who anyway had a license, launched a CDMA service in addition to its existing AMPS service.

In an interesting development, BTTB [and thereby GoB] accusing the existing mobile operators of forming a cartel and maintaining high tariff had recently [June 2004] jointly contracted Siemens and Huawei of China to deploy USD 76 million nationwide mobile infrastructure, initially, to serve 250,000 customers. GoB has said it will raise necessary funds by selling telecom bonds to the local market. [T&T bond explained earlier]. This seems to be a highly controversial and highly political deal. (Silva, Khan 2004)

2. **Access to scare resources and Licensing:** For mobile telecommunication allocating spectrum is a vital issue. Spectrum management is the process of regulating the use of radio frequencies to promote efficient use and gain a net social benefit.*(Cave et al. 2007).* Most countries consider radio frequency(RF) spectrum as an exclusive property of the state. The RF spectrum is a national resource, much like water, land, gas and minerals. Unlike these, however, RF is reusable. The purpose of spectrum management is to mitigate radio spectrum pollution and maximize the benefit of usable radio spectrum. Spectrum is a precious national resource, for this spectrum division of BTRC does the planning, formulating and implementing guidelines for using spectrum. BTRC manages and monitors the spectrum on behalf of the government. Works related to automated spectrum management are also going on beside assigning frequencies to various radio services. Currently measures have been initiated for effective, accurate and expeditious ways to determine present and probable future demand for various frequency bands, making new frequencies usable and ensuring effective methods of allocation of spectrum. Also the future expansion of telecommunication sector mostly depends on these activities. (BTRC Annual report, 2012-2013) With the establishment of BTRC, the industry expected an effective spectrum management regime as opposed to the existing practice. The telecom law provided for the formation of an efficient "Spectrum Management Committee", headed by a BTRC Commissioner for this specific purpose. Recently BTRC has received a technical assistance grant from the World Bank to establish a frequency monitoring and management capability. It hopes to rationalize its allocation plan and develop a scheme for efficiently distributing frequencies to the market via a spectrum pricing policy. In addition it will support the much needed human resource development issue and also procure and implement a Spectrum Management and Monitoring System so that it has the tools to effectively manage the radio spectrum. (Silva, Khan 2004)
3. **Interconnection:** The term "interconnection" is defined by the International Telecommunication Union as:"The commercial and technical arrangements under which service providers connect their equipment, networks and services to enable customers to have access to the customers, services and networks of other service providers."Absence of a conducive interconnection regime is a major bottleneck for the growth of the fixed line sector in Bangladesh. Service providers are prone to predatory

pricing and to refusal of access to competitor operators. Interconnection with BTTB is consistently named as one of the top issues to be resolved in the sector by private operators. (Silva, Khan 2004) For this purpose, BTRC has created BTRC interconnection regulation 2004. The main purpose of this regulation is to mainly regulate the orderly development in the telecom system, prevent and abolish discrimination in the provision of services, ensuring fair competition, encourage the introduction of new services, promote and safeguard the interests of consumers by ensuring reliable and fairly priced modern services with reasonable accessibility. Another objective of this policy is to control and monitor "VoIP", which has been a major concern for BTRC for the last few years.

4. **Tariff Regulation:** A tariff for a given telecommunications service is more than just the charges for that service. A tariff consists of a description of the service, the terms and conditions of service provision and the applicable charges. (Tariff Regulation and Implementation: Scott W. Minehane, Managing Director Presentation to Regional Meeting of Study Group 3, Mozambique, 2009(Source: www.itu.int).Regulation on mobile tariff is a competitive safeguard particularly in the early stages of market stabilization. It helps to ensure the cost of each services are recovered. It also protects the consumer's interests on price, quality, fair trading, misleading advertising etc. An article mentioned in a daily newspaper described some tariff plan by BTRC like this:

   "The Bangladesh Telecommunication Regulatory Commission has made certain tariff regulations for telecom operators. The commission is in the process of formulating a comprehensive 'Tariff Regulation' in consultation with all stakeholders in the telecom industry. The regulations include call charges, irrespective of any promotion, any package, any network, timing, pulse and F&F. There should also be uniformity in the tariff plans offered in different locations. The other regulations include limitation of promotional tariffs for a period of two consecutive months or less, no migration charges can be applied if an existing subscriber desires to migrate to a new promotion package, and if bonus airtime/talk time is granted as reward in a package, such bonus facility will be applicable for off-net call purpose only. The provisions are interim in nature and would remain effective until further order (Source: www.telecompaper.com).

5. **Quality of Services (QoS):**QoS is a measure of parameters that affect the level of performance a network offers for a specific type of traffic (Voice and Data) of telecom operators. Benchmarking the Quality of services (QoS) provides a measure to compare the services of different service providers and by provisioning such information available for public would assist a discerning customer to select operator based on quality of service. This would also induce the service providers to take measures for improving quality of service conducive to create conditions for effective competition. BTRC has

developed some notable parameters of the QoS specially for the Mobile Operators which are: Call set-up Success Rate, Call Drop Rate, Service Access Delay or Call Setup Time (S), Channel Gain, Static SNR (Signal to Noise Ratio), MOS (Mean Opinion Score) etc.

The Telecom Policy and the Telecom Act of Bangladesh, created by BTRC emphasize the Quality of Service to be rendered by the Licensees, and the Licenses issued by the Commission specify the QoS parameters, standards and the benchmarks that must be complied with. To meet the above objectives and to improve the QoS, BTRC has established some steps like, Every service provider shall submit to the Commission its compliance reports of benchmark standards in respect of each Quality of Service parameter specified in the directives. To ascertain the quality of service BTRC has already started monitoring the network of all mobile operators using own drive test equipment thus ensuring the quality of service as well as customers' satisfaction.

3.3.3.4 The Role of the BTRC as a regulator:

In 2002, Bangladesh Telecommunications Regulatory Commission (BTRC) was established as an autonomous body (under the administrative control of the MOPT) through the enactment of Bangladesh Telecom Act 2001. There are some arguments came from some researcher and agencies that the telecom regulator failed miserably to monitor service quality and implement the relevant provisions of the Telecommunications Act. (Yusuf, Abu, 2010) As he mentioned in his research:

> "It has been around more than 12 years since the mobile sector was fully liberalized in 1997. But BTRC could not set any quality benchmark, which is considered as an essential tool for continuous improvement of quality of services (Debnath & Shankar, 2008) till to date to ensure service quality for the operators. Such quality benchmarks have been in place in many countries including Australia, India, Malaysia, Pakistan and Singapore. Customers' complaints against the mobile operators' QoS are nothing new in Bangladesh. But apart from the operators' customer service desk, there was no regulatory framework to ensure a minimum standard of mobile phone services (Hasan, 2009). Telecom regulator also did not take any steps (which TRAI of India did) to engage in consultative process with different stakeholders of telecom industry to introduce more competition and help improve QoS (Gupta 2002)."

Yusuf also mentioned in the same study:

> "Moreover, in the licensing conditions, no roll out (minimum subscriber) obligation was given for the operators (except Warid Telecom) to fulfill within a set time period (Hasan 2008a). Rollout obligations are common in other countries6 e.g., In Cyprus, a prime condition in second operator's license was reaching 50% coverage by 2005 and 75% by 2007) (Symeou, 2009).As a result, AKTEL (presently Robi) , CityCell and Sheba (Presently Banglalink) targeted high end of the market and showed no interest in extending telecom services to rural areas. The Indian government has imposed a penalty of over Rs 41 crore on Tatas, Rs 31 crore on Airtel and Rs 19.65 crore on RCom and others, totalling Rs 135.60 crore, for not rolling out their networks on time (The Asian Age, 2009; The Prothom Alo, 19 September, 2009)."

Despite having legal powers for ensuring industry compliance with license conditions, codes and standards, the telecom regulator has rarely functioned in a way that ensures compliance in the industry7. It failed to solve the long standing interconnection and revenue sharing problem between BTTB and mobile operators (Silva and Khan, 2004). Operators hardly faced any consequences for poor performance. As a result, mobile operators' QoS was far below international standards One reason for BTRC's poor performance is its incompetent and inexperienced leadership (Islam, 2006). There were also some cases of corruption happened during the process of giving and renewal stage of license and allocation of frequencies, time to time, to various operators. (Yusuf, 2010) Although the regulatory body was in existence from 2002, it could not demonstrate its enforcement powers. It seems the BTRC leadership was somehow influenced by the regulated firms not to enforce any measures that disadvantaged them. It has been rightly commented, 'malpractices crept in the sector because of the laidback policy followed by the regulatory top brass in the past' (Hasan, 2009a). In developing economies these malpractices are common as reflected in Braithwaite (2006), 'In developing economies the greater risk is the reverse: big businesses networked with ruling families dominate an anti-regulation consensus lubricated by bribery and extortion (2006 p.893).

It has already been stated that until 2006, mobile operators had given minimum regards to customers' rights by mostly ignoring their complaints (Khan, 2004). In few cases, BTRC uttered some cautionary statements such as 'severe punishment will be taken if the operators fail to resolve interconnection problems bilaterally' (The Daily Star, 2005). These statements were later found to be rhetorical because the non-binding recommendations given on interconnection and pricing issues were more flouted than followed by the operators.

Interconnection problems persisted long after this warning as the BTRC was not sincere and committed to implementing its direction (Yusuf, 2010).

Despite this several criticism, it is impossible to ignore the role of BTRC and government's plan with ICT for the development of Bangladesh socio-economic growth. Mobile telecommunication is one of the vital medium to implement these initiatives. As a part of the Digital Bangladesh, Govt. has identified Mobile telecommunication as a key medium to deliver electronic services to its citizens. As BTRC is working with all the operators, it gives a win-win condition for both the parties. Providing facilities of m-Health, m-Education, m-Agriculture, m-Transactions to all the citizens through mobile technology is creating a better platform for development. Although, commercial mobile operators in not looking at these activities as a profit making initiatives, rather they perceive more as an extension of CSR activities, but in future with effective business and strategy plan integration can prove these activities a very effective and attractive, profitable and sustainable business models. And for bridging the gap between profit and sustainable development, BTRC has still a very important role to play.

3.4 Overview of the mobile telecom operators in Bangladesh:

3.4.1 Grameenphone:

Grameenphone started its journey with the Village Phone program: a pioneering initiative to empower rural women of Bangladesh. The name Grameenphone translates to "Rural phone". Starting its operations on March 26, 1997, the Independence Day of Bangladesh, Grameenphone has come a long way. Grameenphone pioneered the then breakthrough initiative of mobile to mobile telephony and became the first and only operator to cover 98% of t he country‟s people with network.

Since its inception Grameenphone has built the largest cellular network in the country with over 13,000 base stations in more than 7000 locations. Presently, nearly 98 percent of the country's population is within the cove rage area of the Grameenphone network. Grameenphone has always been a pioneer in introducing new products and services in the local market. GP was the first company to introduce GSM technology in Bangladesh when it launched its services in March 1997.

Grameenphone was also the first operator to introduce the pre- paid service in September 1999. It established the first 24- hour Call Center, introduced value - added services such as VMS, SMS, fax and data transmission services, international roaming service, WAP , SMS - based push - pull services, EDGE, personal ring back tone and many other products and services. The entire Grameenphone network is also EDGE/GPRS enabled, allowing access to high - speed Internet and data services from anywhere within the coverage area. There are

currently nearly 2.6 million EDGE/GPRS users in the Grameenphone network. Apart from that, their main products & services includes: Pre-paid, Post-paid, Internet, Enterprise solution, Roaming, Device and Adjacent business.

The shareholders of Grameenphone contribute their unique, in- depth experience in both telecommunications and development. It is a joint venture enterprise between Telenor (55.8%), the largest telecommunications service provider in Norway with mobile phone operations in 12 other countries, and Grameen Telecom Corporation (34.2%), a non - profit sister concern of the internationally acclaimed micro - credit pioneer Grameen Bank. The other 10% shares belong to general retail and institutional investors.

The technological know-how and managerial expertise of Telenor has been instrumental in setting up such an international standard mobile phone operation in Bangladesh. Being one of the pioneers in developing the GSM service in Europe, Telenor has also helped to transfer this knowledge to the local employees over the years . After 18 years of operation in Bangladesh, Now they have almost 47.1 million subscriber and more than 60 thousand shareholders as of Dec. 2013. who has been empowered under a single network. In Bangladesh mobile telecom operator GP has the largest market share.

3.4.2 Robi:

Robi Axiata Limited is a joint venture company between Axiata Group Berhad, Malaysia and NTT DOCOMO INC, Japan. It was formerly known as Telekom Malaysia International (Bangladesh) which commenced operations in Bangladesh in 1997 with the brand name AKTEL. On 28th March 2010, the service name was rebranded as „Robi" and the company came to be known as Robi Axiata Limited.

Robi is truly a people- oriented brand of Bangladesh. Robi, the people's champion, is there for the people of Bangladesh, where they want and the way they want. Having the local tradition at its core, Robi marches ahead with innovation and creativity.

To ensure leading- edge technology, Robi draws from the international expertise of Axiata and NTT DOCOMO INC. It supports 2G voice, CAMEL Phase II & III and GPRS/EDGE service with high speed internet connectivity. Its GSM service is based on a robust network architecture and cutting edge technology such as Intelligent Network (IN), which provides peace - of -mind solutions in terms of voice clarity, extensive nationwide network coverage and multiple global partners for international roaming. It has the widest International Roaming coverage in Bangladesh connecting 600 operators across more than 200 countries. Its customer

centric solution includes value added services (VAS), quality customer care, easy access call centers, digital network security and flexible tariff rates.

Robi Axiata Limited is a Joint Venture company between Axiata Group Berhad (70%) and NTT DOCOMO INC. (30%). Axiata is an emerging leader in Asian telecommunications with significant presence in Malaysia, Indonesia, Sri Lanka, Bangladesh and Cambodia. In addition, the Malaysian grown holding company has strategic mobile and non - mobile telecommunications operations and investments in India, Singapore, Iran, Pakistan and Thailand.
NTT DOCOMO INC is the world's leading mobile communications company and the largest mobile communications company in Japan. DOCOMO serves over 56 million customers including 44 million people subscribing to FOMA™, launched as the world's first 3G mobile service based on W- CDMA in 2001. Robi's main services are different Pre-paid, post -paid services and Supplementary services. Robi has gained their competitive advantage in both Price and network.

3.4.3. Citycell:

Citycell (Pacific Bangladesh Telecom Limited) is Bangladesh's pioneering mobile communications company and the only CDMA network operator in the country. Citycell is a customer-driven organization whose mission is to deliver the latest in advanced telecommunication services to Bangladesh. The company offers a full array of fixed and mobile services for consumers and businesses that are focused on the unique needs of the Bangladeshi community. Citycell's growth strategy is to integrate superior customer service, highest standard technology and choice of packages at affordable rates.
The company operates a 24-hour call centre with over 86 well trained operators to respond to customer queries. Citycell's customer service is open 7 days a week to ensure customers can access Citycell at any convenient time. City cell is the first mobile operator in Bangladesh. They started their operation in March 24, 1994. City cell choose CDMA as their network technology. CDMA is trusted to be the best mobile communication technology in the world in terms of network performance. However, City cell could not take the market leadership because of their go - slow policy. City cell's is offering a wide range of competitive prepaid and postpaid mobile packages as well as Value Added Services such as SMS and information based services.
City Cell (Pacific Bangladesh Telecom Limited) is a privately owned company with majority foreign ownership equity. SingTel Asia Pacific Investments Pte Ltd owns 45% of Citycell while Pacific motors and Far East Telecom Limited own 31.43% and 23.57% respectively.

3.4.4 Teletalk:

Teletalk Bangladesh Limited is a public limited company, registered under the Registrar of the Joint stock companies of Bangladesh. Total shares owned by the Government of the Peoples Republic of Bangladesh.

We continue to grow and engage our customers through our clear commitment to offering high quality products and services as well as leading customer retention and loyalty programmers. Teletalk continues to be a part of the revolution that's connecting millions of Bangladeshi people and around the world.

Teletalk Bangladesh limited was established keeping a specific role in mind. Teletalk has forged ahead and strengthened its path over the years and achieved some feats truly to be proud of, as the only Bangladeshi mobile operator and the only operator with 100% native technical and engineering human resource base, Teletalk thrives to become the true people's phone – "Amader Phone".

TeleTalk started operating on 29 December 2004. It is a Public Limited Company of Bangladesh Government, the state-owned telephone operator. **Teletalk** is the only operator in **Bangladesh** (**Owner**: 100% **Bangladesh** Government) with 100% native technical and engineering human resources.

The products & services of Teletalk includes: Different Pre-paid & Post-paid packages, Value added-services, GPRS, Push-pull services, ISD and EISD, DESA Load shedding push-pull services, Mobile application through GPRS. Teletalk was the country's first 3G service introducer in the mobile telecom market with a very affordable price.

3.4.5 Banglalink:

Banglalink Digital Communications Limited is fully owned by Telecom Ventures ltd. (previously Orascom Telecom Ventures Limited) of Malta, which is a fully owned subsidiary of global telecom holding s.a.e. (formerly known as orascom telecom holding s.a.e.) following business combination in April 2011 between vimpelcom ltd and wind telecom s.p.a, vimpelcom owns 51.92% shares of global telecom holding s.a.e. (formerly known as orascom telecom holding s.a.e.).The ultimate parent company of the group is vimpelcom, the 6th largest mobile phone operator in the world.

In september 2004, global telecom holding s.a.e. (previously known as orascom telecom holding) purchased 100% of sheba telecom (pvt.) limited in bangladesh. global telecom holding re-branded the newly acquired company and launched its services as "banglalink" in february 2005. Immediately after the launch, global telecom holding started its aggressive plans to develop banglalink as a major player in the local mobile industry by rapidly expanding its gsm network to provide high quality communications services at affordable prices. overnight mobile

telephony became an affordable option for customers across a wide range of market segments At present, one of the largest telecom market share holder, banglalink serves over 27.3 million subscribers (with 25.5% market share) as of july 2013.

Banglalink's success was based on a simple mission: "bringing mobile telephony to the masses" which was the cornerstone of its strategy. Banglalink changed the mobile phone status from luxury to a necessity and brought mobile telephone to the general people of Bangladesh and made a place in their hearts. the mobile phone has become the symbol for the positive change in Bangladesh.

This positive change that is quite correctly attributed to banglalink, has become the corporate positioning of banglalink and is translated in their slogan "making a difference" or "din bodol". "making a difference" not only in the telecom industry, but also through its products and services, to the lives of its customers. this corporate stance of "making a difference" has been reflected in everything banglalink does.

Banglalink attained 1 million subscribers by December 2005 and 3 million subscribers in October 2006. In less than two years which is by December 2007, banglalink overtook aktel to become the second largest operator in Bangladesh with more than 7.1 million customers. banglalink currently has 20.05million subscribers as of April 2011, representing a market share of 27.03% growth over the last years have been fuelled with innovative products and services targeting different market segments, aggressive improvement of network quality and dedicated customer care, creating an extensive distribution network across the country, and establishing a strong brand that emotionally connected customers with banglalink.

Their Products and services includes: Different Pre-paid and post paid services, Roaming, Internet and Value-added services and devices.

3.5 Service quality parameters used by the mobile telecom operators in Bangladesh:

In mobile telecom industry, Service quality parameters or more technically, Quality of Service (QoS) are important to assess the performance of the different operators according to the benchmark set by the BTRC. Also, it gives the companies a direction to assess their performance and build their competitive strategy against their competitors. The result of setting these parameter by BTRC has created significant impact on the service quality of the operators.

"Overall, QoS of the mobile operators increased significantly in the period of 2005 onwards for two reasons (1) high competition among operators following the entry of public sector mobile firm and launching of services by a private firm with considerable clout and (2) the effective regulatory monitoring by the BTRC since 2007" (Alam, 2010)

To know more deeply about the quality of service, we can divide the (QoS) in two basic form. One can be technical(hard skill of the service) and other can be customer service (soft skill of the service). Experts also fragmented service quality in some basic segments. "Quality of telecommunications service depends on both the telephone network and the supporting services. The first is known as 'equipment and system oriented quality' and the second as 'people and process oriented quality'. Equipment and system oriented quality consists of activities directly related to the network while people and process oriented quality consists of activities provided over the telephone network or face to face. The equipment and system oriented quality can be either objective (e.g. percent of access lines served by digital switches) or subjective (e.g. satisfaction with voice clarity).Similarly, people and process oriented quality can be either objective or subjective (Alam, 2010)

Clements (2004:416) advanced the following framework for local telephone QoS: 1.Equipment and system oriented and 2. People and process oriented.

According to BTRC, there are some service quality parameters and KPI(Key performance indicator) for guiding the operators , but for ensuring the internal service quality, all the operators has additionally fixed their own service quality parameter. Because of the importance and the secrecy, it was almost impossible to collect the internal service quality parameters from the operators. At best, the researcher in this study has collected some parameters by taking in depth interviews of the respective service quality managers of various mobile operators in Bangladesh. According to BTRC's Published framework and the collected information, the following table describes the service quality parameters that are used to ensure the service quality by our mobile telecom operators.

The following tables 3.2 & 3.3 describes different service quality measurement parameters set by BTRC and various mobile operators in Bangladesh.

Table 3.2: Service Quality parameters according to BTRC

SQ Parameters (Process related)	Fixed By BTRC
CS KPI:	Call set-up success rate
	Congestion due to SDCCH
	Congestion due to Paging Channel
	Congestion due to TCH
	Call drop rate
PS KPI	EGPRS TBF Throughput (GSM Cells only)
	Average Throughput for PS R99 Service (UMTS Cells only)
SMS Service	Completion Rate for SMS Service
Benchmarking KPI	Rx Level(90o/o samples)
	MOS(90% samples)
Benchmarking KPI	Call Setup Time
Operational KPI	Accumulated Down Time Of BTSs
Customer Complain Management	No of complaints per 100 Customers
Customer Complain Management **operators**	Response Time to customer for assistance in Customer Care a. Electronically b. Voice to voice (Through an Operator)

*Source: Primary Data

*Source: BTRC, Interim Directives on Qualitv of Service (QoS) for Mobile Operators, (2014)

** For Terminology clarification, please see Appendix

Table 3.3: Service Quality parameters according to the various mobile telecom operators.

SQ Assessment Criteria (People related)	**Fixed By Operators**
Greeting	Proper Greeting
Service Skills	Professional Tonality & Liveliness
	Voice Skills
	Call Etiquette
	Helpful with Empathy
	Active Listening
	Managed Hold Procedures
Accuracy- End User critical error(EE),Business Error (BE), Compliance Error (CE)	Rude/Unprofessional behavior/Lost temper/Violation of COC/Unethical Practice/Improper way of delivery/false info
	Issue/problem identified
	Correct/complete information
	Issue/problem resolved
	Proper SR
	Followed process
Closing	Proper closing

3.6 Chapter Summary:

The sector of telecommunication industry in Bangladesh is emerging day by day. Though there are some problems, both in the regulatory environment and market, there are also some prospects. If all telecom operators comes in one platform for giving better service to all types of subscribers, then total industry will be able to earn more profit and confidence of general subscribers. The contribution of this sector through technology in the development is remarkable. From m-health to m-banking, from m-agriculture to empowerment the impact of this sector is significant.

This chapter has tried to examine the basic structure of the mobile telecom industry in our country, the regulatory framework, challenges and opportunities involved with this sector, different service quality measurement parameters both for process and people related.

In many previous studies it was found that service quality has an enormous role for company's growth and sustainability. For the government, this sector is one of the most profitable and lucrative for earring tax and revenue. If both our government and operators can focus on the

comprehensive and transformative approach to customer experience management, it may unlock more values across operator's networks and service offerings.

Chapter 4

Conceptual Model and Hypothesis Development

4.1 Overview:

This chapter outlines the development of the conceptual research model used in this study. The objective of this chapter is to develop a service quality model and its linkage to customer's continuation intention, based on the research findings and gaps identified and combined in Literature review chapters. The research model illustrates the formation of service quality as perceived by customers of the Bangladesh mobile communication services and the potential relationships that may exist between service quality, customer perceived value, customer satisfaction, customer's continuance intention involved with their switching pattern, loyalty and net promoting tendency. The review of the literature evidently indicates that there is a scarcity of research in the context of service quality dynamics in the mobile telephony service systems in developing countries. In this regard, Walsham et al. (2007, p, 317) mention that "despite the importance of the topic area of information systems in developing countries, the literature to date is relatively sparse". Specifically, there is no empirically-tested service quality model for the emerging telecom sectors in Bangladesh platform which is applicable across all contexts. As such, there are some clear research gaps in the context of service quality in the mobile telecom area and its association with critical service outcomes in terms of conceptual models, reliable and valid instruments, representative sampling and generalizable findings. There was hardly any literature found which was written in Bangladesh perspective touched those mentioned area. These Voids offers significant contribution to the knowledge advancement in this area. Thus, to fulfill this research gap a conceptual model has been develop which shows a multidimensional, hierarchical relationship with service quality and its outcome on customer's continuance intention.

This chapter is organized as follows: section 4.2 describes the development of the conceptual model based on the literature reviews and gaps identified discussed in the previous chapters. Section 4.3 proposes seven hypotheses to investigate the association between service quality and its outcome constructs. The proposed hypotheses are based on the following research objectives:

1. To identify the link between service quality and consumer behavior in the telecommunication industry in Bangladesh (thus, determining consumers behavioral intention to the mobile telecommunication service providers in Bangladesh)

2. To make a company wise comparative gap analysis based on the findings.

3. To identify those factor which creates customer satisfaction in the mobile telecommunication industry in Bangladesh and thus (If any) the new factors can be added to determine the service quality level of the mobile telecommunication service in Bangladesh.

4. To develop a theoretical service quality model where service quality as an mediator on consumers continuation intention for the mobile telecommunication industries in Bangladesh, based on the finding of this study.

Section 4.4 specifies the nature of the theoretical research model that has been developed in this study and section 4.5 gives the summary of this chapter.

4.2 Development of Conceptual Model:

A conceptual model enables systematic accumulation and presentation of knowledge (Gregor 2006). The model proposed in this study explains the service quality dynamics in the mobile telecom sector by framing its components and consequences in the context of developing countries specifically in Bangladesh. Epistemologically, the model embraces an explaining and predicting paradigm (Gregor 2006) and a proxy view of an IT artifact (Orlikowski & Iacono 2001).Epistemologically, the model embraces an explaining and predicting paradigm (Gregor 2006) and a proxy view of an IT artifact (Orlikowski & Iacono 2001). Ontologically, the model extends knowledge by developing a hierarchical, multidimensional service quality model with its relationship to customer's continuance intention in the context of developing countries.

The conceptual research model (See Figure 3.1) was developed using a multidimensional and hierarchical structure and is based on the framework introduced by Brandy and Cronin (2001), and Dabholkar et al. (1996). Also, it was based on the literature in marketing and information systems as the study focuses on a technology-mediated service platform. In service research, such an interdisciplinary approach is important and necessary to adequately address the challenges and opportunities (Ostrom et al. 2010). The conceptual model elucidates an overview of associations in terms of a cognitive (i.e., SQ)-affective (i.e., SAT)-conative (i.e., ICU and QOL) framework (Bhattacherjee 2001; Chiou et al. 2006; Brady & Cronin 2001; Cronin & Taylor 1992; Dagger et al. 2007; Oliver 1997, 1999; Patterson 1997; Taylor & Baker 1994; Woodside et al. 1989).

The model tries to identify the link of consumer beliefs, affect and intention within the consumer attitude structure, which begins with cognitive beliefs (i.e., evaluating perceived service quality), followed by affective responses (i.e., satisfaction) and ends with conative effects (i.e., Continuance intention specifically to switching pattern, loyalty and net promoting tendency).

The conceptual research model suggests that the users of Bangladesh mobile communications services evaluate mobile communications service quality at three ordered and hierarchical levels: an overall level, a primary dimensional level, and a sub-dimensional level. The sub dimensional level consists of multiple sub-dimensions pertaining to each of the service quality primary dimensions. The primary dimensional level consists of three primary dimensions, interaction quality, physical environment quality, and outcome quality. The identification of these levels was adopted from Brandy and Cronin (2001), and Dabholkar et al. (1996). These three primary dimensions are combined together to reflect customers' overall perceptions of service quality. The model also illustrates the potential relationships that may exist between service quality, customer satisfaction, customer perceived value, and continuance intention namely switching pattern, loyalty and net promotion intention in the Bangladesh mobile communications market.

Service quality is an important concept in IS, marketing and health care (Wilson & Lankton 2004); there has been some research conducted on service quality and its relationship with customer satisfaction and continuance intention, but no such study was found in the context of Bangladesh in any service related area, not specifically in mobile telecom arena. The exclusivity of this research model is the integration of the interaction quality, Physical environment quality and outcome quality on perceptions of service quality and customer satisfaction and how its effect on customers continuance intention. Therefore, focusing on users' perceptions (DeLone & McLean 1992, 2003; Jiang et al. 2001; Parasuraman et al. 1988), the study proposes a service quality model (Figure 4.1) which is hierarchical, multidimensional and context-specific to measure the impact of service quality on satisfaction and continuance intention. This study intends to measure only the 'perception score' of service quality because it matches users' evaluation of the service experienced more precisely (Andaleeb 2001, 2008; Brady & Cronin 2001; Cronin & Taylor 1992; Dabholkar et al. 2000; Dagger et al.2007).

The study specifies that the conceptual model is comprised of hierarchical-reflective constructs because the extant research on service quality perception (Brady & Cronin 2001; Fassnacht & Koese 2006; Parasuraman et al. 2005) and measurement model specifications (Edward & Bagozzi 2000; Jarvis et al. 2003; Petter et al. 2007; Wetzels et al. 2009) have embraced such a view. Various study specifies service quality as a hierarchical construct or multidimensional model as service quality involves more than one dimension at multiple levels (Chin 2010; Edwards 2001, Jarvis et al. 2003; Law & Wong 1999; Law et al. 1998; MacKenzie et al. 2005; Netemeyer et al. 2003; Petter et al. 2007, Wetzels et al. 2009) One of the significant advantages of a hierarchical construct is that it allows for more theoretical parsimony and less model complexity (Edwards 2001; Law et al. 1998; MacKenzie et al. 2005). Also, the study

adopts the perspective of a reflective model (Jarvis et al. 2003; Petter et al. 2007) because all the dimensions and sub dimensions of service quality share a common theme.

Koese (2006) adopt the framework introduced by Rust and Oliver (1994) viewing service quality as a hierarchical construct with three dimensions for the conceptualization of the quality of electronic services in Germany: environment quality, delivery quality, and outcome quality. Each of the three dimensions has various sub-dimensions. Fassnacht and Koese's (2006) findings provide empirical evidence for the notion that service quality is a multidimensional hierarchical construct. Fassnacht and Koese (2006) conclude that the hierarchical approach they use for measuring service quality may be more easily applied to a broad range of electronic services than the traditional approaches (e.g. SERVQUAL and SERVPERF). Consistent with Brady and Cronin (2001) and Dabholkar et al's (1996) notion that service quality is perceived at multiple levels of abstraction, Dagger et al., (2007) develop and empirically validate a multidimensional hierarchical scale for measuring health service quality in Australia. The authors investigate the scale's ability to predict customer satisfaction and behavioral intentions. Dagger et al.'s (2007) findings support the notion that customers evaluate service quality at an overall level, a dimensional level, and a sub-dimensional level and that each level drives perceptions at the level above. Dagger et al. (2007) conclude that the findings of their study provide an improved understanding of how customers evaluate health service quality.

Lu et al. (2009) note that there is little research on how to measure the service quality of mobile communications service providers. Using a mobile brokerage service as an example, the authors develop and test a multidimensional and hierarchical model to measure mobile communications service quality in China in order to assist providers of mobile communication services to improve their service quality as perceived by customers. The multidimensional and hierarchical model developed by Lu et al. (2009) is based on the framework suggested by Brady and Cronin (2001), and Dabholkar et al. (1996). Lu et al.'s (2009) findings provide empirical support for the contention that customers evaluate mobile communications service quality at three ordered and hierarchical levels. The authors conclude that their multidimensional and hierarchical model is applicable for measuring service quality in mobile communications markets.

A more comprehensive discussion on the nature of the model is presented below. Here, the dimensions and sub dimensions of service quality model is defined and tries to investigate the association of these constructs on customers perception of service quality, satisfaction and continuance intention particularly on switching pattern, loyalty and net promoting tendency in the context of mobile telecom sector in Bangladesh.

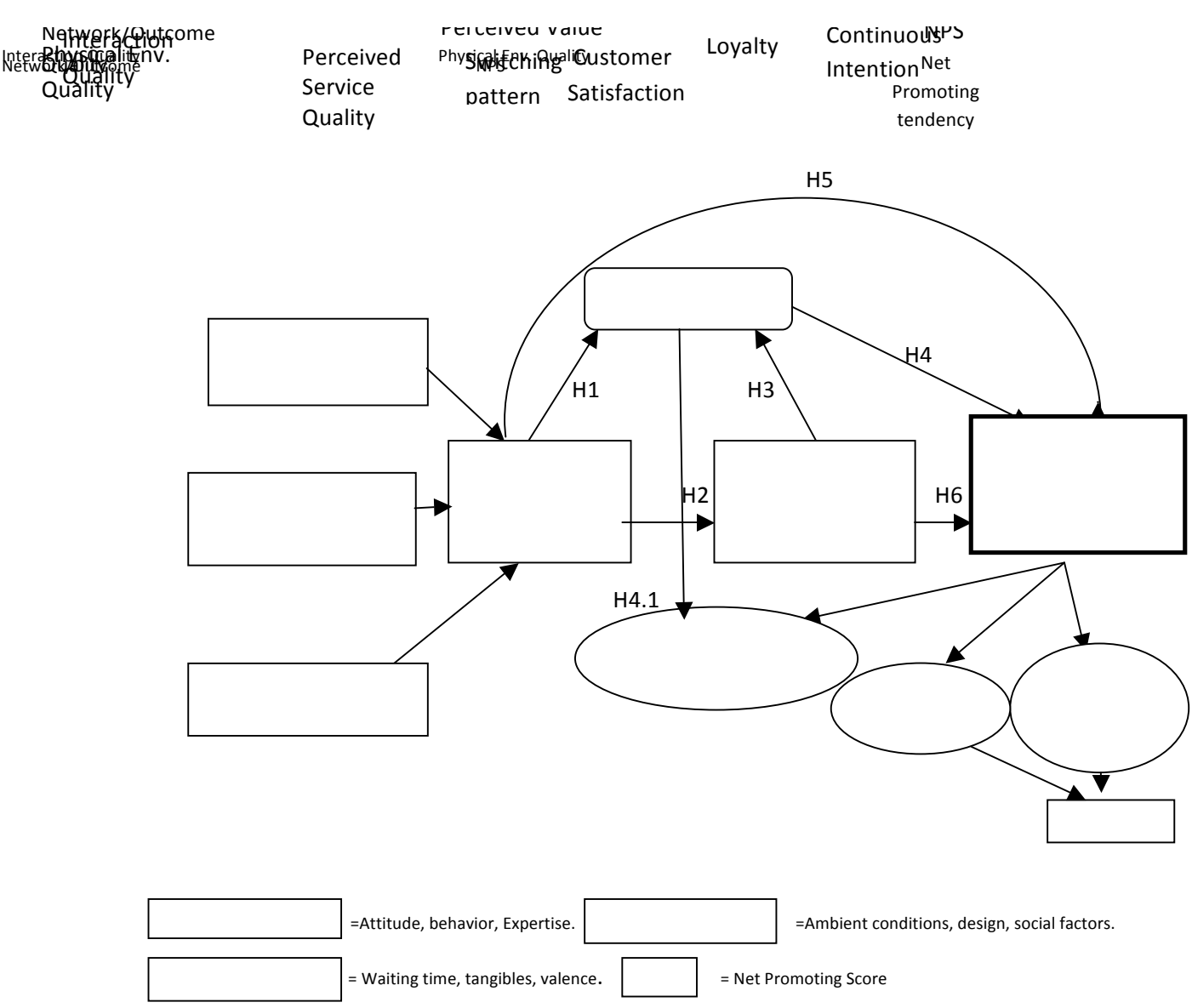


Figure 4.1: Conceptual Research Model

4.3 The Primary Dimensions of Service Quality

A multidimensional and hierarchical model based on the framework introduced by Brady and Cronin (2001), and Dabbolkar et al. (1996) is developed and empirically tested in this study in order to conceptualize and measure mobile communications service quality as perceived by the users of the mobile telecommunication services in Bangladesh. The research model suggests that users evaluate mobile communications service quality at an overall level, a primary dimensional level, and a sub-dimensional level. The following sections provide a review of the service marketing literature that relates to the primary dimensions of mobile communications service quality.

Interaction Quality : The interactions between customers and employees that take place during service delivery impact on customers' overall perceptions of service quality (Brady and Cronin, 2001). Despite the fact that mobile communication services may involve less interpersonal interactions when compared to other types of services such as hotel or restaurant services, the service marketing literature suggests that the interpersonal interactions between mobile

communications service providers and their customers have a significant impact on mobile communications service quality as perceived by customers (Lu et al., 2009; Lai et al., 2007; Lim et al., 2006; Wang et al., 2004; Kim et al., 2004). For example, Lai et al.'s (2007) findings reveal that if employees of mobile communications service providers are polite, a favorable impact on customers' perceptions of mobile communications service quality is likely to occur in the mobile communications market.

Physical Environment Quality: The surrounding physical environment in which the service delivery process takes place has a notable impact on customers' overall perceptions of service quality, despite the fact that services are characterized by intangibility (Bitner, 1992). Dabbolkar et al. (1996) suggest that physical aspects are similar to the tangible dimension of SERVQUAL, but that physical aspects have a broader meaning. Lai et al.'s (2007) and Wang et al.'s (2004) findings show that the store environment, such as whether physical facilities provided by mobile communications service providers are visually appealing, and whether employees of mobile communications service providers are well dressed and neat in appearance, have a significant impact on customers' overall perceptions of mobile communications service quality (Sue, 2010).

Outcome Quality: Outcome quality, or technical quality, is what customers receive after the service delivery process and buyer-seller interactions are complete (Gronroos, 1984). Brady and Cronin (2001) suggest that there is a consensus that customers' perceptions of outcome quality have a significant impact on customers' overall perceptions of service quality. For example, Lim et al.'s (2006) findings reveal that outcome quality, such as whether mobile communications service providers provide accurate and understandable billing, has a significant impact on customers' overall perceptions of mobile communications service quality in the United States. In addition, Wang et al.'s (2004) findings show that outcome quality such as whether mobile communications service providers deliver their services at the times they promise to do so significantly impact on customers' overall perceptions of mobile communications service quality.

According to the model it is assumed that, these three primary dimensions and its components plays a significant role on customer perceived value and service quality. These perceptions create an impact on customer's satisfaction and their continuance intention. A more detailed discussions on this variables are already made on the previous literature review chapters. In this study, mainly customers switching pattern, loyalty and net promoting tendency is the subject matter of investigation as a part of customer's continuance intention. The reason behind for this investigation is that there was no such study found in Bangladesh mobile telecom service arena and that is the uniqueness of this study and the conceptual research model.

4.4 Hypothesis development

Several factors identified in previous studies may potentially influence global mobile communication service customers' perceptions of interaction quality, physical environment quality, and outcome quality (See, Lu et al., 2009; Lai et al., 2007; Lim et al., 2006; Adyin and Ozer, 2005; Wang et al., 2004). However, Cronin and Taylor (1994) suggest that dimensional structures need to be confirmed for each research setting. Ueltschy and Krampf (2001) also suggest that service quality scales tend to be culturally sensitive. Thus, the sub-dimensions of interaction quality, physical environment quality, and outcome quality are identified in this study through focus group and key informant interviews, the literature review, and exploratory factor analysis specifically for customers of mobile communication services in Bangladesh.

4.4.1 Perceived service quality and perceived value

Customers' perceptions of service quality are proposed to positively influence customer perceived value (Lai et al., 2009; Lim et al., 2006; Oh, 1999; Sweeney et al., 1999), customer satisfaction (Kim et al., 2004; Wang et al., 2004; Parasuraman et al., 1994; Cronin and Taylor, 1992), corporate image (Lai et al., 2009; Adyin and Ozer, 2005; Bloemer et al., 1998; Nguyen and LeBlanc, 1998), and perceived switching costs (Chou and Lu, 2009; Aydin and Ozer, 2005). Thus, given the important link between service quality and perceived value , this study posits perceived value as a function of perceived service quality. So, the hypothesis can be:

H1: Service quality positively influences mobile telecom customer's perceived value

4.4.2 Perceived Service Quality and Satisfaction

Customer perceived service quality is proposed to have a positive influence on both customer satisfaction (Tung, 2004; Cronin et al., 2000; Fornell et al., 1996; Rust and Oliver, 1994) and customer loyalty (Lin and Wang, 2006; Yang and Peterson, 2004; Anderson and Srinivasan, 2003; Bolton and Drew, 1991). Service satisfaction becomes an important cornerstone for service-oriented business practices around the world (Szymanski & Henard 2001). Satisfaction also leads to favorable results, such as higher rates of patient retention and higher profits (Peyrot et al. 1993; Zeithaml 2000). Caruana et al. (2000) believed that the influence of service quality on customer satisfaction was not only direct but also moderated by perceived value. Caruana et al. (2000) noted that understanding the relationship between the perceived value, service quality and customer satisfaction constructs could help service organizations to develop more effective management. Although the perceived value, service quality and customer satisfaction constructs were usually subject to an individual's subjectivity, they have played important roles in determining customer choices, their decisions to deepen or terminate a relationship and therefore customer retention and long-term profitability (Caruana et al., 2000).Thus, given the important link between service quality and satisfaction, this study point out satisfaction as a function of perceived service quality. Therefore, the next hypothesis is :

H2 : Service quality has a positive impact on satisfaction on mobile telecom users.

4.4.3 Perceived Value, service quality, satisfaction and continuance intention

Several researchers have demonstrated that perceived value has been viewed as the best and most complete antecedent of customer satisfaction (Chen, 2007b; Park, 2007; Cronin et al., 2000; McDougall & Levesque, 2000; Oliver, 1997; Parasuraman, 1997; Dodds et al., 1991). According to Shonk (2006), an extensive body of research recommended that customer satisfaction with a service was influenced in part by value. Gallarza and Saura (2006) showed that there appeared to be a natural chain between service quality, perceived value and customer satisfaction. Zeithaml (1988) indicated that a business organization could increase the overall perceived value of its service by increasing customers' overall perceptions of service quality. Several researchers have found that service quality had a direct influence on perceived value (Chen, 2007b; Wei, 2004; Petrick & Backman, 2002; Cronin et al., 2000; Tam, 2000; Zeithaml, 1988).

Hellier et al. (2003) proposed that the influence of perceived value on customer satisfaction was supported by a value disconfirmation experience. Customer perceptions of value would be altered after their purchase if there was an unexpected increase or decrease in the cost incurred or benefit received (Hellier et al., 2003). Several researchers noted that customer satisfaction or dissatisfaction affected their subsequent expectations of value, purchase behavior (continuance intention) and overall levels of satisfaction (Voss, Parasuraman, & Grewal, 1998; Woodruff, 1997). Hellier et al. (2003) indicated that customers' overall perceptions of service value positively influenced overall service satisfaction. However, a lot of debate regarding the relationship between perceived value and customer satisfaction has remained open in the services marketing literature (Hu et al., 2009).

The success of a technology-mediated service platform,(i.e. mobile telecommunication)depends a lot on ongoing usage rather than initial acceptance (Bhattacherjee 2001; Limayem et al. 2007; Venkatesh & Davis 2000). As such, an increasing body of research in this domain depends on continuance theory (Akter et al. 2010a; Akter et al., 2012a). This study defines continuance as a usage stage when technology-based service use transcends conscious behavior and becomes part of normal routine activity (Bhattacherjee 2001). The continuance decision is similar to consumers' repurchase decision which is primarily based on satisfaction with a particular product or service (Anderson & Sullivan 1993; Oliver 1980, 1993). Bhattacherjee (2001, pp. 351-352) highlights the importance of continuance in IT services by saying that "long-term viability of an IS and its eventual success depend on its continued use rather than [its] first time use". Thus, continuance behavior is a highly relevant construct from a practical perspective because service usage obviously continues well beyond the initial adoption (Montoya et al. 2010).

Both service quality and service satisfaction have profound impact on future use intentions (Cronin et al. 2000; DeLone & McLean 2003; Venkatesh et al. 2003; Wixom & Todd 2005). According to Dabholkar et al. (2000, p. 144) "… customer satisfaction will have a mediating role on behavioral intentions rather than an effect independent of service quality". Prior studies have found that there is a direct quality impact on intentions to use and also an indirect impact on intentions to use through satisfaction (Wixom & Todd 2005; DeLone & McLean 2003). However, this study uses 'Continuance intention' instead of 'intention to use' as it is necessary for an IS to be truly able to measure net benefits (DeLone & McLean 2003; Teo et al.2007). Intention to continue using is defined as a behavioral pattern reflecting continued use of a particular IS (Limayem 2007). It is also defined as a usage stage when IS use transcends conscious behavior and becomes part of normal routine activity (Bhattacherjee 2001). Some studies refer to intention to continue using as a usage behavior, commonly labelled as post implementation (Saga & Zmud 1994) or post-adoption (Jasperson et al. 2005) which are equally important to attaining information technology implementation. Hence, this study focuses on post-adoption which actually refers to a suite of behaviors that follows initial acceptance (Rogers 1995), including continuance, routinization, infusion, adaptation, assimilation, etc., which is often used as a synonym for 'intention to continue using' in the literature (Karahanna et al. 1999).

Some researchers (e.g., Bhattacherjee 2001; Limayem et al. 2007) say that long-term viability of an IS and its eventual success depend on its continued use rather than its first-time use. In the context of IS, perceived quality and satisfaction tend to reinforce a user's intention to continue using the system (Limayem et al. 2007; Teo et al. 2008). A growing number of service providers are interested in knowing about this relationship because it predicts overall financial performance (Bernhardt et al. 2000; Eskildsen & Kristensen 2003; Kristensen et al. 2006; Rucci et al. 1998).

Although the relationships between perceived value and customer satisfaction or behavioral intentions has been debated in service marketing (McDougall and Levesque, 2000), in recent years perceived value has gained special attention as a stable construct in predicting consumer buying behavior (Hellier et al., 2003). Many researchers agree that value has a significant influence on customer satisfaction and behavioral intentions (Andreassen and Lindestad, 1998; Chen and Tsai, 2007; Lee et al., 2007; McDougall and Levesque, 2000; Patterson and Spreng, 1997; Pura, 2005). In their empirical examination of the role of perceived value in explaining consumer behavior in a service context, Patterson and Spreng (1997) found that customer's perceived value is a positive and direct antecedent of customer satisfaction. Andreassen and Lindestad (1998) found that value has a positive impact on customer satisfaction in developing a customer loyalty model in a complex service context. Additionally, in investigating the relationships among service quality, perceived value, satisfaction, and behavioral intentions,

McDougall and Levesque (2000) found that perceived service quality and value were the most significant drivers of customer satisfaction across various service sectors.

Furthermore, since the last two decades, research in marketing has shown that customer behavioral intention can be explored from three attitudinal aspects: customer satisfaction, perceived value and switching barriers. The first stream is often called the ‘‘service quality satisfaction- behavioral intentions’’ paradigm (Lapierre et al. 1999; Dabholkar et al. 2000). Previous studies suggest that customers’ positive behavioral intentions come from their satisfaction, while satisfaction is the result of good service quality. Specifically, satisfaction is a strong mediator of the effect of service quality on behavioral intentions (Dabholkar et al. 2000).

Thus, researchers have also proposed the concept of perceived value, which simultaneously combines the benefit and cost aspects to explain customer behavioral intentions (Monroe 1991; Zeithaml 1988). In general, perceived benefits have most often been operationalized in terms of service quality (Jen and Hu 2003; Lapierre et al. 1999; Zeithaml 1988), and perceived costs have been divided into monetary prices and nonmonetary prices (Choi et al. 2004; Wang et al. 2004). Existing literature also provides significant empirical evidence in support of the positive relation between service quality and perceived value, while the relation between perceived costs and perceived value is negative (Choi et al. 2004; Cronin et al. 2000; Jen and Hu 2003; Lapierre et al. 1999; Liu et al. 2005; Wang et al. 2004).

However, companies can also encourage desirable consumer behavioral intentions by raising switching barriers so that customers are unlikely to change to an alternative provider. Research suggests that with the exception of customer satisfaction and service quality, switching barriers also play an important role in explaining customer behavioral intentions (Burnham et al. 2003; Huang et al. 2007; Jones et al. 2000; Liu et al. 2009; Yim et al. 2007). Furthermore, when switching barriers are high, customers find it difficult or costly to defect even if they are not very satisfied or when short-term fluctuations in service quality occur (Ranaweera and Prabhu 2003; Wathne et al. 2001). The construct of switching barrier is a crucial latent factor that questions the role of service quality or customer perceived value impacting customer satisfaction and their continuance intention.

Based on the above literature findings, therefore, the study points out the following hypothesizes:

H3 : Customer satisfaction positively impacts customers' perceived value.

H4 : Perceived value plays a significant role in continuance intention of the customers.

H4.1 : Perceived value plays a paradoxical role in switching behavior of the customers.

H5: Perceived Service quality has a positive impact on the continuance intentions of the mobile telecom users.(specifically in their switching behavior, loyalty and promoting tendency)

H6: Satisfaction has a positive impact on mobile telecom customer's overall continuance intentions.

4.5 Chapter Summary

This chapter has identified few gaps based on the literature review: 1) a lack of research on customer perceptions of service quality in the Bangladesh mobile telecommunication sector; 2) a lack of research on the moderating effect of perceived value on service quality and customer satisfaction in the Bangladesh mobile telecommunication industry; 3) very little research on the impact of influential factors in the same mentioned area; (4) very few studies paying attention to the dimensions of service quality that customers perceive to be more or less important in the mobile telecom area in Bangladesh; and 5) very little research focusing on the effect of demographic characteristics on customer perceptions of their continuance intentions, satisfaction, service quality, value, loyalty, switching pattern, net promoting tendency and the primary and sub dimensions of service quality in the Bangladesh mobile telecom industry.

The Objective of this chapter was to develop a service quality hierarchical model with customer satisfaction and their continuance intention in the context of mobile telecommunication industry in Bangladesh. The conceptual model has been developed in this chapter with the support of relevant literatures found in this area. This conceptual multi-level model has been developed mainly based on Brady and Cronin's (2001) service environment hierarchical model, and Dabholkar et al.'s (1996) multi-level model of retail service quality, but the primary dimensions and sub dimensions are developed based on the context of mobile telecommunication industry in Bangladesh.

The study proposed in total six hypotheses based on the research objectives used in this study. The main objectives of these hypotheses are to investigate the association between service quality and outcome constructs in the base model and examine the role of service quality and satisfaction as a mediator on customer's continuance intention. Overall, the conceptual model of the study filled the gaps identified in Chapter 2 (Literature Review [Context &Literature Review (Theory)]) by proposing a service quality model for the mobile telecommunication services in a developing country context like Bangladesh. The next chapter discusses research methodology to test the proposed conceptual model with its hypothetical relationships.

Chapter 5

Research design

5.1 Overview

The main objective of this chapter is to present an outline of the research methodology to conduct this study. Therefore, this chapter is organized as follows: first portion of this chapter gives a detail about sampling plan, sampling technique, procedure and what particular sampling has been used for this study with justification. The next section 5 discuss about the research instrument that is questionnaire design, pre-testing and method of data collection. The next section presents a layout for data analysis techniques and lastly s brief chapter summary has been given to have a overall idea of this chapter.

5.2 Sampling Plan

This section discusses the sampling plan employed to obtain the sample for the study. Therefore, the sampling methods will be discussed. Once the sampling method is decided, the sampling procedure, sample size, sampling choice, location and unit will be highlighted.

Sampling methods and sampling size concerns are mostly complex and require careful considerations because the wrong sampling procedure could leads to research errors and biasness (Zikmund, 1997). According to Burns and Bush (2010), sample size has an impact on how the sample findings accurately represent the population. It was supposed that any chosen sample size is not expected to be completely representative of the population from which it is drawn, therefore it is not expected that two samples drawn from the same population would be exactly alike. Accordingly, one would expect to see in the sample drawn from the population some sort of error to a certain degree, which can be referred to as a sampling error. Saunders, Lewis and Thornhill (2009) argue that the larger the sample is, the more likely that the generalizations are an accurate reflection of the population. There are also a number of factors that can affect the sample sizes such as time and money available for data collection (Hair, 2006), and the statistical analysis that the researcher intends to use (Saunders, Lewis and Thornhill (2009). Generally, there is an agreement among the authors of statistical books that the larger the sample, the more appropriate it is for factor analysis (Pallant, 2007). In this context, Hair (2003) proposed that any sample size of more than 100 is appropriate for factor analysis and he also suggested that sample size should be five times the number of variables included in the questionnaire. The number of variables used in the study is 52 ; therefore any sample size greater than 260 is appropriate.

An important issue in the research is to determine the sampling procedure properly in order to collect the required data. Sampling is the procedure of selection of individuals who will participate in the research to provide the required data. This sampling procedure calls for three dimensions (Koltar and Armstrong, 1996):

1. Sampling unit. This answers who is to be surveyed?

2. Sample size. This answers how many people should be surveyed?

3. Sampling procedure. This answers how should the respondents be chosen?

Also, Malhotra and Dash (2010) suggested the sampling process as follows:

Step 1. Define the target population: The collection of elements or objects that posses the information sought by the researcher and about which inferences are to be made.

Step 2. Determine the sampling frame: A representation of the elements of the target populations. It consists of a list or set of directions for identifying the target population.

Step 3. Select a sampling technique: This involves several decisions of a broader nature. The researcher must decide whether to use a Bayesian or traditional approach, to sample with or without replacement, and to use nonprobability or probability sampling.

Step 4. Determine the sample size: The number of elements to be included in a study.

Step 5. Execute the sampling process. This requires a detailed specification of how the sampling design decisions with respect to the population, sampling frame, sampling unit, sampling technique and sample size are to be implemented.

They also suggested that the most important decision about the choice of sampling technique is whether to use probability or nonprobability sampling.

Basically, the sampling methods can be categorised into probability sampling and non-probability sampling (Saunders, Lewis and Thornhill, 2007; Craig and Donglas, 2005; Malhorta, 1996; Churchill, 1995; Parasuraman, 1991), each of which can be broken down into different sampling types:

1. Probability Sampling- Simple Random Sampling; Systematic Sampling; Stratified Random Sampling; Cluster Sampling and Multi-Stage Sampling.

2. Non-Probability Sampling- Quota Sampling; Purposive or Judgemental Sampling; Snowball Sampling; Self Selection Sampling and Convenience Sampling.

5.3 Sampling methods

5.3.1 Probability sampling:

In probability sampling, each unit of the defined population has a known and non-zero chance of being included in the sample. This type of sampling is the most widely used by researchers as a result of its sound theoretical basis, and accordingly, mathematics of probability can legitimately be used. Probability sampling is the complete objective method of sampling a population. Within this method of sampling, the calculation of confidence limits for sampling error will be allowed to obtain a representative sample. This sampling technique also maximises the ability to examine the accuracy of estimates obtained from the survey (Tansey, 2007).

(1) **Simple Random Sampling**. This is the most well-known method of probability sampling. In this method each element of a population has an equal chance to be selected. The population elements are randomly selected once at the same time, independent of each other and without replacement. This can be achieved for instance by using random number tables. This method helps to avoid subjective bias arising from a personal selection of sampling units. Saunders, Lewis and Thornhill (2007, p. 218) add "this form of sampling is not suitable if you are undertaking a survey that covers a large geographical area and requires face-to-face contact."On the other hand, they mention that simple random sampling would still be suitable for a large geographical area in the case of using alternative technique of collecting data such as postal questionnaires or telephone interviewing.

(2) **Systematic Random Sampling**. In this sampling method, all elements of a population are not given equal chance of selection. It involves choosing every nth person from a target population list after the first unit is selected at random. Saunders, Lewis and Thornhill (2007, p. 221) have noted that, "systematic sampling is suitable for geographically dispersed cases only if you do not require face-to-face contact when collecting your data".

(3) **Stratified Random Sampling**. Within this sampling method, the population is divided into mutually exclusive groups or strata (such as age groups), and random samples are drawn from each group. The homogeneity in each group is more than the total population, which in turn contributes to the accuracy of the sampling process (Saunders, Lewis and Thornhill, 2007).

(4**) Cluster Sampling.** This is the probability sampling that differs because it seeks to select clusters of population elements, instead of selecting individual elements of population. This method is adopted when "natural" groupings are evident in the population. The total population is divided into clusters chosen randomly and within these clusters every unit is sampled. Elements within a cluster should be as heterogeneous as possible, but there should be homogeneity between clusters (Craig and Donglas, 2005).

Often a 2-stage sample design is adopted, where the first stage sampling includes the selection of clusters and the second stage the selection of elements within the selected cluster; sub-sampling within clusters may give a better estimate of the total.

(4) **Multistage Sampling**. In this method cluster sampling and stratified sampling are combined. By combining different sampling methods, researchers can achieve a rich variety of probabilistic sampling methods to fit a wide range of social research context.

5.2.2 Non probability sampling:

Non-probability sampling is the second most common method of sampling. In this sampling method the elements of a population do not have equal chance of selection within the sample. It relies on the personal judgment of the researcher in the selection process. This sampling method can be categorized into different types (Tansey, 2007).

(1) **Quota Sampling-** It is the most widely used type of non-probability sampling. It seeks to ensure that the sample is representative by selecting elements in a way that the proportion of the sample elements possessing a certain characteristic (e.g. age, gender, social class, etc.) is approximately the same as the proportion of the elements with the characteristic in the population. However, quotas are set by the researcher and, the selection of the actual respondents is the responsibility of the interviewer; therefore, this can lead to bias, the degree of which cannot be objectively measured.

(2**) Purposive or Judgemental Sampling** - It selects the elements of population by means of "expert judgment". Following this procedure, experienced individuals in the subject matter of the survey select what they believe to be the best sample for that particular research. It is also noted that there is no objective method of assessing the reliability of sampling results. In contrast to convenience sampling, judgmental sampling tends to take more time and money to assemble.

(3**) Snowball Sampling -**This method is often adopted when it is difficult to obtain elements of the targeted population. Within this type of sampling, a contact with one or two cases in the population will be needed, then these cases will be asked to identify further cases, and these new cases will be also asked to identify new cases (and so on). The researcher must stop when either no new cases are given or the sample is as larger as is manageable.

(4**) Convenience Sampling-** It is also called accidental sampling. It seeks to obtain people who are most conveniently available. Convenience samples are often adopted to obtain a large number of completed questionnaires quickly and economically.

In view of the above discussions, this research adopts what it considers to be the most suitable sampling methods. The researcher therefore adopted non-probability sampling. The

respondents to the survey were chosen using a non-random selection method. A non-probability sample was chosen versus a probability sample primarily due to the large population that potentially could be involved, the absence of a sampling frame, the need for undertaking a survey that covers a large geographical area and the limitations in the timing of conducting the survey and costs. However, probability sampling requires the availability of satisfactory population lists, (e.g. sample frames), and it usually includes considerable costs of time and money (Saunders, Lewis and Thornhill, 2007). This does not affect the results as non-probability samples can still be used effectively in similar research (see Table 5.9 below).

Table 5.1: Sampling method used in different service quality research:

Author	Research main aim	Sampling method
Alrasli, Mehtap-Smadi and Katircioglu, (2005)	To measure service quality perceptions of Greek Cypriot bank customers.	Non-probability convenience sampling
Alrasli, Katircioglu and Mehtap-Smadi, (2005)	To analyze and compare service quality in commercial banking sector in the Turkish and Greek-speaking areas.	Non-probability convenience sampling
Caro (2008)	To develop comprehensive model for measuring service quality in travel industry.	Non-probability convenience sampling
Kim and Jin (2002)	To determine whether the retail service quality scale could be validated in a discount retail setting in the USA and Korea.	Non-probability convenience sampling
Elmayar (2007)	To measure service quality levels in the Bank of Commerce and Development in Libya.	Non-probability convenience sampling
Shu Xin (2010)	To develop a Hierarchical model of the chinese mobile communication market.	Non-probability convenience sampling

It can be argued that the literature suggested the benefits of using non-probability sampling when the circumstances involved prevent conducting probability sampling. Henry (1990, p. 32) for instance reported, "only in the cases where probability samples cannot be used are non probability samples viable." In the same context, Saunders, Lewis and Thornhill (2007, p. 226) stated that "within business research such as market surveys and case study research, this may either not be possible (as you do not have a sampling frame) or appropriate to answering your research question. This means your sample must be selected some other way. Non-probability sampling (or non-random sampling) provides a range of alternative techniques to select samples based on your subjective judgment". The convenient sampling approach is a simple process, saving the researcher's time, money and effort when a list of all members of a given population is not available, when it is inconvenient to randomly select individuals in a given population, or when it is convenient to select homogenous samples from a given population for observation (Fink and Kosecoff, 1998).

Following the above argument, non -probability sampling method in the form of convenience technique was being selected to conduct the survey part of this study. And for the qualitative nature of data collection, Purposive Sampling in the form of Expert Sampling/Key Informant interview and Snowball sampling was used.

5.4 Sampling Procedure

For the non-probability sample, the procedure of convenience sampling is adopted to generate the respondents for the survey.

The reasons for adopting convenience sampling for this study are:

1. It is suitable to obtain a large number of completed questionnaires quickly and economically.

2. It enables the researcher to access people who are most conveniently available in the service points . This facilitates the administration of the questionnaires face-to-face, which is the most convenient option in Bangladesh (given the difficulty of conducting postal or internet questionnaires).

3. The sample selection process can be continued until the required sample size has been reached (Saunders, Lewis, and Thornhill 2007).

4. This method of sampling can obtain a good response rate (Craig and Douglas, 2005).

The respondents were mixed customers of all the mobile telecom operators in Bangladesh. According to the BTRC announcement on May 2013, the mobile penetration in Bangladesh is 66.36% among the whole population with a growth of 10% per annum. So, the customers were selected from all the divisions which are Dhaka, Chittagong, Khulna, Rajshai, Rangpur, Barisal,

Comilla and major marketplaces of each division. Random selection of the telecom operators service point / touch points were also selected for generating the respondents of this study.

For the Survey, this study attempts to cover all the major divisions in Bangladesh. Major marketplace of each division were selected to ensure that maximum assorted combination of respondents in terms of gender, income group and age can be reached. In terms of selection of the major touch points of the telecom operators, lottery was used for each division. Based on the result, that particular telecom company's walk-in customers were asked for participating in the survey.

Thus the survey was not based on a group of respondents from a totally random selection as the primary basis was for a respondent to have been going into different mobile telecom operator's service points. Moreover, it was also ensured that the respondent had at least one year of mobile phone user experience and was over 18 years of age.

5.5 Target Population with Sampling Frame, Unit and Element:

Specifying the target population is the fundamental building block of sampling design process. Generally, the target population represents the sample elements or objects that have the relevant information and about which inferences are drawn (Malhotra 2004). The target population also draws the boundary line between respondents and non-respondents. Thus, it is necessary to be as specific as possible to decide who should and who should not be in the sample. As per BTRC, October 2013 data, the total mobile phone subscribers in Bangladesh are 111.797 million. All major divisions which are Dhaka, Chittagong, Khulna, Rajshai, Rangpur, Barisal, Comilla and major marketplaces of each division, random selection of the telecom operators service point / touch points were selected as sampling frames. Since, the mobile phone penetration rate is approx.66% , it is assumed that in those areas most of the people have access to mobile phones. So, equally number of respondents were selected randomly equally from each division after asking some quick screening questions.

For Expert Interview, Service Quality managers from each of the Telecom Operators were interviewed. If that person was unable to answer any of the issue raised by the researcher of this study, he/she then referred the researcher to the respective person/managers of those organization.

5.6 Sampling Technique

5.6.1 Quantitative Data:

In the absence of lists for drawing a random sample, surveys were undertaken in the major seven divisions in Bangladesh using convenience sampling method. Convenience sampling inherently is a non-probability sample method. Zikmund (2003) demonstrated that convenience sampling was referred to as sampling by obtaining units or people who were most conveniently available. Cooper and Schindler (2006) noted that convenience sampling was element selection based on accessibility. Zikmund (2003) illustrated that researchers generally adopted convenience sampling to obtain a large number of completed questionnaires quickly and economically. Kumar (2005) showed that convenience sampling was common with market researchers and newspaper reporters. Starmass (2007) and Cooper and Emory (1995) indicated that the obvious advantages of adopting convenience sampling were low cost and saved time. Although useful applications of the convenience sampling technique were somewhat limited, the sample could deliver accurate results when the population was homogeneous (Starmass, 2007). Lunsford and Lunsford (1995) indicated that subjects were selected because of their convenient accessibility to researchers through the convenience sampling. These subjects were simply chosen because they were the easiest to obtain for the study. In general, a convenience sample was obtained by simply stopping people in the street who were willing to respond to the questions of the survey (Starmass, 2007). Lunsford and Lunsford (1995) demonstrated that the convenience sampling was an easy, fast and usually the least expensive and troublesome method. In order to have a convenient access to the subjects, the convenience sampling method was used in this study. This technique also increases sampling efficiency by decreasing costs (Hair et al. 2010). In the context of developing countries, it is cost-effective and easy to implement (Malhotra 2004).

5.6.2 Qualitative Data:

For the Qualitative data collection Purposive sampling method was used. In this study, mostly Expert sampling and Snowball sampling technique were used. Expert sampling involves the assembling of a sample of persons with known or demonstrable experience and expertise in some area. It is the best way to elicit the views of persons who have specific expertise. In this case, Expert sampling is essentially just a specific sub case of purposive sampling. Expert sampling is to provide evidence for the validity of another sampling approach the researcher have chosen (Trochim 2009).

Table 5.2: An Overview of the Sampling Process

Sampling Process	Sampling Strategy of the study	Comments
Target Population	Mobile phone service user in Bangladesh. (More than 111.797 million subscriber as of October, 2013)	The collection of all the elements sharing some common set of characteristics comprising the population for our research problem.
Sampling Frame	Quantitative: Seven Divisions (Dhaka, Chittagong, Rajshai, Rangpur , Khulna, Barisal Comilla, Sylhet) Qualitative: Five mobile telecom Operators (Grameen phone, Banglalink, Robi, Airtel, Citycell, Teletalk) service quality managers.	These clusters represent sample unit of the target population.
Sampling Unit	All Mobile phone user in these seven divisions.	These sample units contain the elements of the target population to be sampled.
Sampling Elements	18+ males and females who have experience of using mobile phone service in Bangladesh at least for one year.	These respondents meet our qualifications and are able to give information to test inferences
Sampling Strategy	Non-Probability Sampling	Convenience Sampling and Expert sampling, as this was used previously in many service Quality research and very much Cost-time effective method.
Sample Size	QT : 932 completed samples QL: Seven Expert interview.	1200 Questionnaire was distributed equally to all divisions, out of that 932 complete survey questionnaire was used.

5.7 Determining the sample size

Two techniques were used for the data analysis in this research; exploratory factor analysis and structural equation modeling. The sample size was determined according to the requirements of the two data analysis techniques which are exploratory factor and multiple regression.

5.7.1 For Exploratory Factor and Multiple Regression analysis:

In general, it is advisable to use a fairly large sample in order to obtain results which are representative of the population. In order to decide upon the appropriate sample size for this research, the researcher reviewed some of the sample sizes used in similar research on measuring service quality as a guide to an adequate research sample size. It was noted for instance that Petridou, *et al.,* (2007) distributed 350 questionnaires to the customers of Greek banks, and they also distributed 200 questionnaires to the customers of Bulgarian banks, making a total of 550 questionnaires. Glaveli et al. (2006) have measured telecommunication service quality in Greece, Bulgaria, Serbia, Albania and Macedonia. They used sample sizes of 153, 70, 40, 40 and 37 questionnaires respectively, giving a total of a 340 questionnaires. A large sample size was adopted by Spathis, Petridou and Glaveli, (2004). Their sample consisted of 1260 questionnaire to measure service quality of mobile telecommunication in urban and rural Greece. Al-Tamimi and Al-Amiri (2003) distributed 700 questionnaires to two UAE Islamic banks. All of their research was subject to measure the service quality.

The total sample sizes of these studies averages 520 with unequal distribution across the countries in which they were used. In deciding on this research sample size the researcher also considered the fact that, “Minimum sample sizes for a quantitative consumer survey are of the order of 300 to 500 respondents” (Crouch, 1984, p. 142). Furthermore, the following two points were considered before deciding the sample size being used in this research study (Nachmias and Nachmais, 1981):

- The larger sample size is needed for the sample to be representative.
- The sample size should meet the statistical requirements of a particular statistical analysis that the researcher wishes to conduct.

Hair (2003) proposed that any sample size of more than 100 is appropriate for factor analysis and he also suggested that sample size should be five times the number of variables included in the questionnaire. The number of variables used in the study is 52 ; therefore any sample size greater than 260 is appropriate.

In view of the above arguments and after reviewing the literature, the researcher has considered to use a sample size of 1200 mobile phone customers from the all mobile telecommunication company would be suitable and appropriate for this type of research. These 1200 user was equally divided from seven major divisions of Bangladesh. Also, the sample

method used in this research allows the researcher to use her subjective judgment in terms of a sampling plan.

5.8 Questionnaire Design

5.8.1 Development of the Questionnaire:

The review of the several literature regarding service quality measurements on telecommunication sector revealed mainly two dimensions; Process Quality, and Outcome Quality(Kang 2006). The development of the questionnaire used in this study mainly followed previous related research work identified dimensions and categories. However, in order to help identify the sub-dimensions pertaining to the three primary dimensions, two focus group interviews were conducted. Focus groups have been used for a number of years in marketing research to reveal customers hidden needs, wants, attitudes, feelings, behaviors, perceptions and motives regarding services, products or practices (Hair, Bush, and Ortinau, 2000, pg.223). In particular, Greenbaum (1998) suggests that focus group interviews are most popular with attitude research, such as service quality evaluations. Cooper and Schindler (2003) recommend that a focus group interview should consist of 6 to 10 respondents. Hair et al. (2000) suggest that the focus groups should be as homogeneous as possible. Therefore, the two focus groups consisted of participants who were eighteen years or older, and had been a subscriber of any mobile operator in Bangladesh for at least one year.

The domain of the construct was specified to the participants at the start of the focus group interviews, as recommended by Churchill (1979). Participants were asked to explain all the factors that contributed to their perceptions of service quality as subscribers of their mobile operator. Moreover, participants were requested to evaluate their overall perceptions or experiences as subscribers of their operators and not to concentrate on one particular service encounter. Following this discussion, the participants were asked to place the factors that impact on their perceptions of service quality under each of the three pertaining primary dimensions of service quality; Interaction Quality, Physical Environment Quality and Outcome Quality. At this stage, the participants were also encouraged to list any additional factors that influenced their perceptions regarding interaction quality, physical environment quality and outcome quality in their recent Mobile service experience. They were also asked to identify the factors related to their loyalty and switching behaviors with mobile telecom operators. Finally, the participants were asked to discuss and identify any factor that could not be listed under these issues in order to determine if any additional primary dimension should be considered for inclusion in the conceptual research model.

The findings generated in the two focus group interviews were recorded and transcribed. Subsequently, the findings from the two focus group interviews and the literature review were

used to help identify the sub-dimensions in the conceptual research model and to assist with item generation in the questionnaire development process.

5.8.2 Pre-Testing Procedure:

Prior to conducting the survey, a pre-test was conducted in order to improve face validity and content validity of the initial version of the survey instrument. A measurement has face validity when the measurement appears to measure what it is supposed to measure (McDaniel and Gates, 1998). Content validity is the assessment regarding the extent to which an empirical measurement reflects a specific domain of content (Carmines and Zeller, 1979, pg.20).

The assessment of face and content validity for the initial version of the survey instrument was performed through a two-step process. The first step involved asking three Service Quality experts and two industry experts to review and freely comment on the survey questions. The three Service Quality experts and two industry experts also assisted in checking the translation consistency of the questionnaire.

The study developed the initial version of the questionnaire in English using the extant literature and findings from focus group discussions. In the next step, the study translated the measures into the local language (Bangla) with the help of Google translators and retranslated it into English until a panel of experts, fluent both in English and Bangla confirmed that the two versions were reasonably comparable (Andaleeb 2000, 2001, 2008)

The second step involved selecting a small representative group to review the survey questions. A convenience sample was randomly drawn from 30 subscribers of different mobile operators in Bangladesh who were eighteen years or older, and had been a subscriber of any the mobile operators for at least one year. Respondents to the pre-test were encouraged to make comments and suggestions on any question that they thought was ambiguous or difficult to answer. Minor modifications of the questionnaire, such as clarifying sentences and using appropriate words and question order, were made after the pre-test was complete.

5.8.3 Scale Design and Layout of the Final Survey Instrument:

The final version of the questionnaire (See Appendix 1) was divided into three sections. Section A describes the usership information, Section B includes mainly all of the elements identified in service quality and its relationship with customer loyalty and satisfaction. Those elements are: 1. Service Provision 2. Billing related (post-paid and Pre-paid) 3. Customer Care/help service 4. Network performance / Reliability/Availability 5. Supplementary service/Value added Service 6. Perceived Value 7. Brand Image/Trust 8. Switching cost 9. Customer Loyalty 10. Satisfaction. Section C contained demographic information of the respondent. In addition, a formal

introduction was used in the questionnaires in order to explain the research background and objective to the respondents.

The questionnaire contained performance-only items as a number of marketing academics support the use of performance-only measures over difference score measures (Zeithaml et al., 1996; Cronin and Taylor, 1994; Brown et al., 1993; Babakus and Boller, 1992; Parasuraman et al., 1991). Moreover, all items regarding customers' perceptions or experiences were positively worded in the questionnaire, as recommended by Parasuraman et al. (1991) and Carman (1990).

Similar to most service quality studies, a Likert scale was employed for the purpose of this research study. In this study a 5 point likeart scale was used to avoid the confusion of the respondents. A number of studies (reviewed by Cox, 1980) have been conducted to examine the effects of different numbers of response categories on the reliability and validity of rating scales and the response patterns generated by them (e.g., Cicchetti, Showalter, & Tyrer, 1985; Matell & Jacoby, 1971; Schutz & Rucker, 1975). In contemporary practice, the majority of rating scales, Likert scales, and other attitude and opinion measures contain either five or seven response categories (Bearden, Netmeyer, & Mobley, 1993; Shaw & Wright, 1967). The results showed that linear regression equations using either 5 point or 7 point likert scale gave results virtually equivalent to those derived from more complicated transformations. (Colman, A. M., Norris, C. E., & Preston, C. C. (1997) Therefore, in this research respondents were asked to rate each item on a Likert-type scale by assigning a value of 1= (very dissatisfied) to 5= (very satisfied).

All items in Sections A, B and C of the questionnaire used a five -point Likert-type scale ranging from Very dissatisfied (1) to very satisfied (5). Respondents were required to circle the number that most accurately reflected their overall mobile operator's experience. The questions included in Sections A, B and C were used to test the Hypotheses that has been developed in this study.

According to Cooper and Schindler (2006), the multiple-choice format with a single response scale implied that only one answer was sought in the questionnaire when there were multiple options for the respondents. Therefore, the multiple-choice format with a single response scale was considered for the study.

Section A

Section A included a total of 7 items for measuring the customer usership. As presented in Table 1, the usership category was sub divided into these following categories: operator selection, duration of uses, type of connection and the reason for switching previous operator's connection.

Table 5.3 Instrument items and Sub-dimensions for measuring usership:

Usership	1	Do respondent use more than one SIM or not.
	2	Which operator's connection respondent use as main connection.
	3	For how long respondent using this mobile connection.
	4	What is the type of service of respondent's main connection.
	5	Did respondent use any other operator connection as your main connection before this one.
	6	Reasons for switching previous connection.(If any)
	7	What other connections respondent use beside his/her main connection(If any).

Section B

Section B included a total of 25 items for measuring overall service quality of the operators and customers attitude and behavior regarding their operators. There were eight pertaining sub-dimensions. As represented in Table 1.2, there were twelve items for measuring service provision, six items for customer care/help service, eight items for network performance, reliability and availability, two items for measuring perceived value, five items for operators brand image/trust , three items for identifying the intention to switch to other operators, five items for measuring customer loyalty, one item for net promoting tendency and finally three items regarding the perception of the overall service quality of the mobile operator.

Table 5.4 Instrument items and Sub-dimensions for measuring Service Quality, Perception and Behavior:

Service Provision	1 2 3 4 5 6 7 8 9 10 11 12	Time taken to get the working connection after application Satisfaction with the activation Satisfaction with the accuracy of charges (pre-paid) Satisfaction with the calling rate offered by the operator(pre-paid) Reason for dissatisfaction with the accuracy of charges (pre-paid) Satisfaction for the timely delivery of bills.(Post-paid) Satisfaction with the accuracy of bills(post-paid) Reasons for dissatisfaction with charges (post-paid) Billing related complaint (Post-paid) Satisfaction with the compliant resolution process(post-paid) Satisfaction regarding clarity of bills and transparency (post-paid) Reasons for dissatisfaction with the billing (post-paid)
Customer care/Help services	1 2 3 4 5 6	Clarity of instruction on top-up card (pre-paid) Ease of access to call center/customer care/help line Willingness of the frontline employees to help customers at touch points/service centers Response time taken to answer customers call by a customer care executive Problem solving ability/knowledge of the customer care executives Time taken by call center/customer care/help line to resolve customers complaint
Network performance. Reliability and Availability	1 2 3 4 5	Availability of signal Voice quality Call success rate(Attempt to establish call) Restoration of network/ signal problem Call drop rate during conversation

Supplementary services/ Value added services	1 2 3	Use of additional supplementary services /value added services. Satisfaction with the explicit consent of the operator for charging value added services. Satisfaction regarding the quality of the value added services.
Perceived Value	1 2	Overall, the service received from the operator is valuable. The Service quality received from the operator is worthy for money, time and effort.
Brand Image/trust	1 2 3 4 5	Operator's reputation is high. Mobile operator is very responsible to the social responsibility The operator delivered a good brand image to its customers. The policies and procedures of the operator is trustworthy. The service process provided by the operator is secure.
Switching cost	1 2 3	Switching to a new operator causes monetary cost, energy, time and effort. Concerns due to change of existing phone number Not satisfied with the service quality of the operator, but for switching cost customer continues with the existing mobile operator.
Customer Loyalty	1 2 3 4 5	Intention to continue using mobile services from this operator for a long time. Even if another operator's price is lower, respondent will go on using the existing provider. Willing to say positive things about this operator to other people. Encourage friends and relatives to use the services offered by this operator. Current operator clearly is able to provide the best service.

Net Promoting Score/Tendency	1	Considering respondents complete experience with the current operator, on a scale of 0-10, how likely is a respondent to recommend this operator (current main connection) to a friend, colleague or relative/close ones?
Satisfaction	1 2 3	Satisfied with the overall service quality offered by the operator. Reasons for dissatisfaction with the overall service quality of the service provider. Satisfied with the performance of the frontline/call center employee of this operator.

Section C

In this questionnaire, Section E was designed to gain descriptive information associated with the respondent's demographic factors. In this section, the researcher adopted a multiple-choice, single response format for the questions using a nominal scale. Here, respondents were required to tick an appropriate box for each question related to gender, division, age, level of education and occupation.

5.9 Method of data Collection

Key informant interview: During preparation of the questionnaire design, some key informant interview was needed for better understanding of the scale development and variable identification as recommended in different literature review. In these research service quality managers from all major mobile telecom operators was interviewed for this purpose. Appointments were set formally through HR of the respective organizations. Altogether eight service quality managers who belong to the middle/top management of their respective organizations were contacted and interviewed. The validity of the research is increased by that participants of the deep interviews represent various commercial organizations, assessing the service quality from different points of view (top managers; operative managers). It supports the reliability that a researcher conducted each deep interview in the same uniform way, fixing the answers (Becser, 2007)

A semi-structured questionnaire was developed, namely, wanted to know, among others, what are the services of good quality in the management's opinion generally means from the aspect of customers of the service field in question, which are the features of the ideal company with regard to quality, which are the factors making customers identify the service quality in the management's opinion(see appendix for the semi-structured questionnaire).

All of the interviews were conducted face-to-face and duration was at least forty-five minutes to one and half hour. Majority of the interviews was not recorded electronically because managers perceived it as a threat to their company's information secrecy. Thus, most interviews were noted down manually. No compensation was given for the management interview as they were appreciated

Focus Group: Two focus group interviews were conducted to identify the latent issues in the customers mind regarding service quality on their mobile operators. This interview group size was consisted of nine participants and eight participants respectively. The first focus group consisted of four female participant and five male participants. The second focus group consisted of four male participants and five female participants. Overall, seventeen participants took part in the two focus interviews, eleven Female participants and nine male participants. Participants were mostly aged among 18-35 of different socio- economic backgrounds. All of them were from urban background.

A semi structured questionnaire was developed to conduct the interview. the main purpose was to understand the perception of service quality in the customers mind that which factor they consider important to service quality by their mobile operators. All interviews duration was at least thirty minutes. These interviews were recorded and then transcribed manually for identifying important attributes. The researcher of this study played the role of the moderator so that the discussions maintain a track related to the research interest. No financial compensation was offered to the respondents for participating in the discussion, rather a light refreshments was given to them after the session as thanks.

Questionnaire: A face-to-face survey technique was conducted in all the major divisions in Bangladesh that is Dhaka, Chittagong, Khulna, Rajshai, Rangpur, Barisal and Comilla and major marketplaces of each division and random selection of the telecom operators service point / touch points were selected for the purpose of the interview. Customers who were over eighteen years old, and had been a subscriber of any of the mobile operator in Bangladesh for at least one year were asked to fill in the questionnaires as they entered or exited the shopping mall or the touch points, and to return the questionnaires immediately when they completed the survey. Respondents could ask the interviewer for assistance if they had difficulties in interpreting the questions. In addition, Willimack, Schuman, Pennell, and Lepkowski (1995) note that a prepaid nonmonetary incentive results in a high response rate in a face-to-face survey. The authors also suggest that no increase in measurement error is evident due to the incentive. Therefore, a high quality ballpoint pen was used as an incentive in order to encourage customers to participate in this research. Customers were told that if they completed a questionnaire, they would receive a high quality ballpoint pen as appreciation for providing assistance with the research.

5.10 Data Analysis Technique

Data analysis proceeded in three steps; data preparation, data analysis and reporting. Computer statistical package SPSS 20 was employed in undertaking four types of statistical analysis; descriptive analysis, factor analysis, chi-square and multivariate (multiple regression) analysis. Preliminary analysis (aims at establishing/testing necessary conditions prior to multivariate analysis) investigated some issues such as addressing missing data, dealing with outliers, test of normality, multicollinearity, singularity, linearity, and homoscedasticity. Preliminary analysis also included sample size and sample bias to measure the differences between groups or variables. The background information in the questionnaire was subjected to descriptive statistical analysis to provide a profile of the respondents. Using cross tabulation, correlation analysis and Chi square test of independence of association, the study sought to establish the existence of significant association between respondent profile, service quality variables and customer satisfaction. Also, for the primary hypothesis testing which were mentioned in the conceptual model, Chi- square analysis was used.

Exploratory Factor Analysis (EFA) was used to identify the main factors that defined service quality and variance explained by the identified factors. The aim of EFA was to explain the matrix of correlations with as few factors as possible (Cheruiyot, Jagongo & Owino, 2012). The output of the descriptive statistics, communalities, correlation matrix, Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's Test of sphericity were adopted as pretest condition to EFA. Factor analysis was undertaken in two stages namely Principal Component Analysis (PCA) and varimax with Kaiser Normalization method.

Finally, multiple regression was used to test the five equation models to examine the relationship between the resulting factors and the dependent variables identified in this study. All of these equations were based on the hypotheses that was linked to service quality, customers' perceived value, continuance intention and satisfaction.

5.11 Chapter Summary

The objective of this chapter was to discuss about the detail of the research methodology that has been used in this study. this chapter argues that the importance of exploring a research paradigm relies very much on the methods used to answer research questions, test hypotheses and on the careful application of research design. Thus, this chapter focused in detail to present sampling plan, questionnaire development, data collection procedure and data analysis techniques.

Chapter 6

Analysis and Results

6.1 Objective:

This chapter aims to discuss the empirical findings of the previous chapter in terms of theoretical significance, methodological rigor and practical contribution. The chapter briefly presents the entire findings addressing the research questions of the study proposed in Chapter 1. This chapter also discusses how the results fill the existing knowledge gaps and make significant contributions in the context of mobile telecom service systems research in developing countries, particularly in Bangladesh. This chapter is divided into four main sections. Section 1 presents the descriptive analysis, where the key demographic data is presented. This section also discusses about the checking of normality of data through outlier detection, normality test and primary hypotheses testing through chi-square test. Section 2 discusses about the exploratory factor analysis and its findings. Section 3 presents the multiple regression analysis and hypotheses testing for each important regression equation. Finally, the last section describes the NPS (Net Promoting Score) for each respective mobile operators in Bangladesh. Overall, the objective of this chapter is to reveal the contributions of the study in terms of the service quality dynamics and its output in terms of customer satisfaction on continuance intention of mobile telecom service in developing country context especially in Bangladesh.

6.2 Section1:

6.2.1 Outlier Detection:

Outliers are the extreme values that are unusually large or unusually small values in a data set (Anderson, Sweeney, and Williams, 2009). Standardized values (z-scores) are used to identify outliers in this study. Hair et al. (2006) suggest that for a large sample (more than 80 observations) any data value with a standardized value less than -4 or greater than +4 can be identified as an outlier. Researchers must decide whether outliers should be deleted or retained as problematic outliers can distort statistical tests (Pallant, 2007). An outlier can be deleted when the outlier is a data entry error or a recording mistake. An outlier can also be deleted when the outlier is an observation that should not be included in the data set.

However, an outlier can be retained when the outlier is an observation that has been recorded accurately and represents a valid element of the data set (Anderson et al., 2009). Only few outliers were identified in the data set of this study by examining the standardized values of observed variables. However, these outliers were recorded accurately and represented a valid element of the data set. According to Anderson et al. (2009), if outliers do represent an

element of the population, these outliers should be retained in order to ensure generalizability to the entire population. Therefore, the outliers identified in this study were retained in the data set.

6.2.2 Normality Test:

Normality refers to the —degree to which the distribution of the sample data corresponds to a normal distribution (Hair et al., 2006, pg.40). Skewness and kurtosis are two indications of normality. Skewness refers to symmetry of a distribution compared with a normal distribution; kurtosis is used to describe whether the peak of a distribution is taller or shorter than a normal distribution (Morgan and Griego, 1998). The values of the skewness and kurtosis can be examined to determine whether the observed variables are normally distributed in a large sample (200 or more) (Field, 2009). Kline (2005) suggests that the absolute value of skewness greater than 3 and the absolute value of kurtosis greater than 8 indicate problems with normality.

The results pertaining to the normality test for the Sample used in this study indicated that themaximum absolute values of skewness and kurtosis were 1.001 and 2.110 respectively (See Appendix 1). These values were well below their respective cut-offs of 3 for skewness and 8 for kurtosis as suggested by Kline (2005), implying that the observed variables for the samples used in this research were approximately normally distributed.

6.2.3 Descriptive Statistics:

Section C of the questionnaire was designed to capture some basic demographic details of the respondents that participated in this study. The results of the demographic characteristics for the total sample respondents are presented in the following Tables from 1.1 to 1.8.

Table 6.1 Gender Results

	Frequency	Percent	Cumulative Percent
Male	539	56.95	57.1
Female	393	43.05	100
Total	932	100	

There were more Male respondents than Female respondents, 539 and 393 respondent respectively.

Table 6.2 Respondent Division Results

	Frequency	Percent	Cumulative Percent
Dhaka	225	24.3	24.3
Chittagong	183	19.7	44.0
Khulna	105	11.3	55.3
Rajshahi	105	11.3	66.7
Barisal	101	10.9	77.6
Rangpur	107	11.5	89.1
Sylhet	106	10.9	100.0
Total	932	100.0	

The biggest proportion of the total sample was 24.3%, which is from Dhaka division. Respondents from Chittagong accounted for 19.7% of the total sample, and formed the second biggest proportion of the total sample. The Lowest proportion sample was collected equally from Barisal and Sylhet division.

Table 6.3 Respondent Age Results

	Frequency	Percent	Cumulative Percent
18-29	437	47.2	47.2
30-39	266	28.8	76.0
40-49	167	17.3	93.3
50-60	62	6.7	100.0
Total	932	100.0	

The biggest proportion of the total sample was 47.2%, and was composed of respondents aged between 18 and 29. Respondents aged between 30 and 39 accounted for 28.8% of the total sample, and formed the second biggest proportion of the total sample. The lowest proportion sample was 6.7% and consisted of age between 50-60.

Table 6.4 Respondent Educational Qualification Results

	Frequency	Percent	Cumulative Percent
Below SSC	35	3.8	3.8
SSC	149	16.2	20.0
HSC	316	34.4	54.4
Graduate	252	27.4	81.8
Post-Graduate	167	18.2	100.0
Total	919	100.0	

The biggest share for Educational qualification of the respondents is HSC level , 34.4% the second major proportion is for Graduate level , 27.4%. The lowest proportion is below SSC level, 3.8%.

Table 6.5 Respondent's main mobile connections

	Frequency	Percent	Cumulative Percent
Grameen phone	342	36.7	36.7
Banglalink	209	22.4	59.1
Robi	164	17.6	76.7
Airtel	118	12.7	89.4
Citycell	61	6.5	95.9
Teletalk	38	4.1	100
Total	932	100	

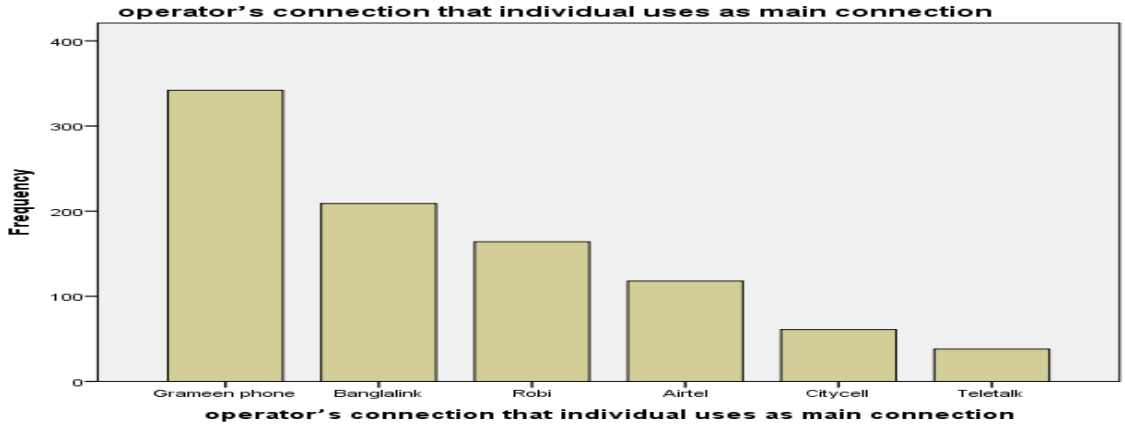


Figure 6.1: Operators percentage within the sample

The above data shows that Grameen Phone is in the highest position in terms of respondents connectivity, Banglalink, Robi, Airtel, citycell and teletalk are in the followed position respectively.

Table 6.6 Promoting likeliness among respondents

how likely are you to recommend this operator (current main connection) to a friend, colleague or relative/close ones

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	19	2.0	2.1	2.1
	1	36	3.9	3.9	6.0
	2	16	1.7	1.8	7.8
	3	38	4.1	4.2	11.9
	4	55	5.9	6.0	18.0
	5	114	12.2	12.5	30.4
	6	110	11.8	12.0	42.5
	7	99	10.6	10.8	53.3
	8	115	12.3	12.6	65.9
	9	113	12.1	12.4	78.3
	10	198	21.2	21.7	100.0
	Total	913	98.0	100.0	
Missing	System	19	2.0		
Total		932	100.0		

The above table describes the net promoting tendency of their mobile operators among the respondents. According to Net promoting score scale 0-6 represents 'not likely to promote' 7-8 'neutral' and 9-10 'most likely to promote.

The graph on the following page describes the tendency among the users of the mobile telecom in Bangladesh. The majority prefers to recommend their operator on a scale of 10 (21%), neutral category has the second highest rating, (12.6%) and the third category is not likely to promote, on a scale of 5 (12.5%) . The next page shows the different mobile telecom operators Net promoter data in a graphical representation.

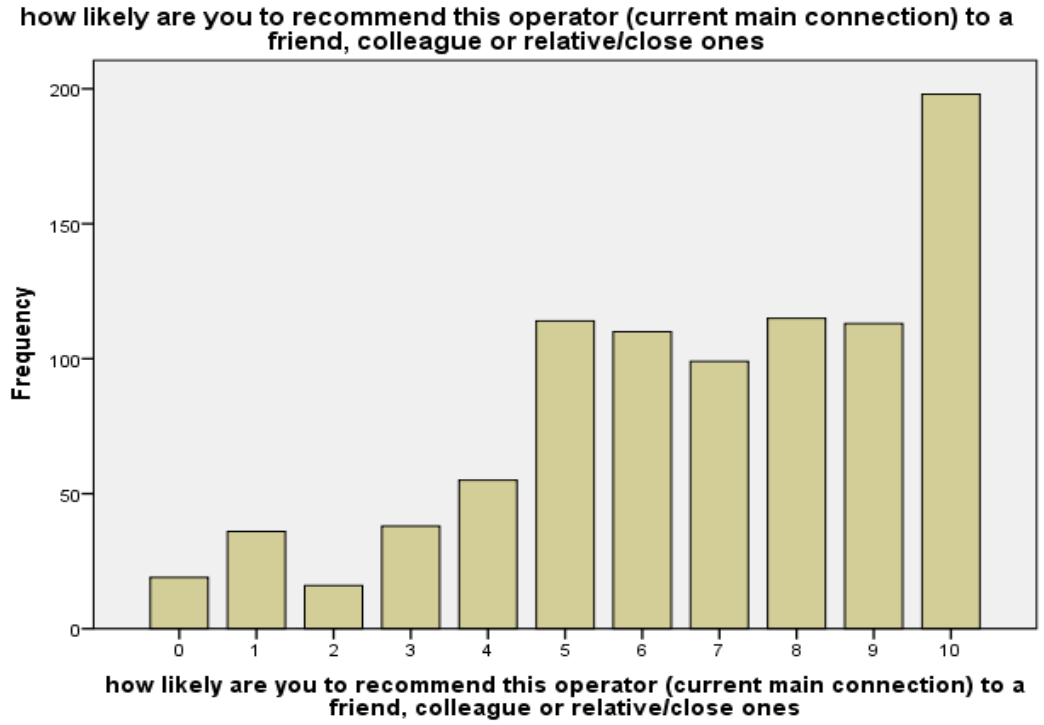


Figure: 6.2 Net promoting score of different mobile telecom operators

6.3 Section 2

6.3.1 Chi-Square (χ^2) Test:

The chi-square (χ^2) test is a typical non-parametric technique. It was good for the analysis of nominal data that observations were grouped into several discrete and mutually exclusive categories (McNabb, 2008). All of the hypotheses that were presented in the conceptual model (chapter 4) were analyzed with the chi-square test to test their significance. The purpose of a chi square test of independence is to determine whether the observed values for the cells develop significantly from the correspondence expected values for those cells. An additional concern addresses the fact that a chi-square statistics is often thought of as a test of association between variables. The chi-square (χ^2) test is used to determine whether there is a significant difference between the expected frequencies and the observed frequencies in one or more categories. To test the significance, mainly Pearson chi-square test value was considered. Pearson's chi-squared test is used to assess two types of comparison: tests of goodness of fit and tests of independence.

- A test of goodness of fit establishes whether or not an observed frequency distribution differs from a theoretical distribution.

- A test of independence assesses whether paired observations on two variables, in a contingency table, are independent of each other (e.g. polling responses from people of different nationalities to see if one's nationality is related to the response). (Wikipedia.org)

6.3.1.1 Interpretation of Chi-Square results (Hypothesis wise):

Based on the chi-square analysis, this inference came for each of the hypotheses. These results are presented in the following tables according to the hypotheses and interpretations were made accordingly.

H1: Service quality positively influences mobile telecom customer's perceived value.

Table 6.7

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	187.124[a]	20	.000
Likelihood Ratio	179.650	20	.000
Linear-by-Linear Association	89.711	1	.000
N of Valid Cases	818		

a. 4 cells (13.3%) have expected count less than 5. The minimum expected count is 1.01.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.478	.000
	Cramer's V	.528	.000
N of Valid Cases		818	

The chi-square test in table 6.1 examines the relationships between service quality and customers' perceived value. It can be seen from the table that the level of significance is .000 at ($p<.05$). Based on this result, we may not reject the alternative hypothesis, meaning service quality positively influences customers' perceived value. Also, in the symmetric measure table, we can measure the association between the independent variable and dependent variable. The Phi and Cramer's V indicates a moderate relationship exists between these two variable.

H2: Service quality has a positive impact on satisfaction on mobile telecom users.

Table 6.8

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	268.235[a]	20	.000
Likelihood Ratio	205.874	20	.000
Linear-by-Linear Association	70.783	1	.000
N of Valid Cases	886		

a. 4 cells (13.3%) have expected count less than 5. The minimum expected count is 2.32.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.550	.000
	Cramer's V	.275	.000
N of Valid Cases		886	

The chi-square test in table 6.2 examines the relationships between service quality and customers' satisfaction. It can be seen from the table that the level of significance is .000 at ($p<.05$). Based on this result, we may not reject the alternative hypothesis, meaning service quality positively influences customers' satisfaction. Also, in the symmetric measure table, we can measure the association between the independent variable and dependent variable. The Phi and Cramer's V indicates a moderate relationship exists between these two variable.

H3: Customer satisfaction positively impacts customers' perceived value.

Table 6.9

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	395.541[a]	20	.000
Likelihood Ratio	307.825	20	.000
Linear-by-Linear Association	160.261	1	.000
N of Valid Cases	880		

a. 7 cells (23.3%) have expected count less than 5. The minimum expected count is .34.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.708	.000
	Cramer's V	.354	.000
N of Valid Cases		882	

On the following table the chi-square analysis examines the relationship between customers' perceived value and satisfaction in Bangladesh mobile telecom industry. A statistical significance of .000 at (p<.05) level, implies that there is a significant relationship between these two mentioned variables. Thus, we may not reject the hypothesis. Also, in the symmetric measure the phi value indicates a strong relationship between customers' satisfaction and perceived value. Meaning if customers; satisfaction is higher, their perceived value will be also higher and vice versa.

H4 : Perceived value plays a significant role in continuance intention of the customers.

Table 6.10

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	151.673[a]	25	.000
Likelihood Ratio	124.669	25	.000
Linear-by-Linear Association	51.372	1	.000
N of Valid Cases	918		

a. 5 cells (12 %) have expected count less than 5. The minimum expected count is .12.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.406	.000
	Cramer's V	.182	.000
N of Valid Cases		918	

From the above table data we can see that the significance level is.000, based on P<0.05. So, based on the above findings we may not reject the hypotheses, meaning customers' perceived value plays a significant role in continuance intention of the mobile telecom customers in our country. The Phi value also indicates that a moderate relationship exists between these variables.

H4.1: Perceived value plays a paradoxical role in switching behavior of the customers.

Table 6.11

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	228.403[a]	25	.000
Likelihood Ratio	190.319	25	.000
Linear-by-Linear Association	46.736	1	.000
N of Valid Cases	917		

a. 9 cells (25.0%) have expected count less than 5. The minimum expected count is .43.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.620	.000
	Cramer's V	.277	.000
N of Valid Cases		915	

This hypothesis tried to explain that perceived value has a paradoxical relationship with switching behavior of the mobile telecom customers. Usually, it has been assumed that if perceive value is high, then switching behavior is low. But, here we wanted to see if perceive value is low, still customer's does not want to switch, because of the various switching cost issues and of the fear of unavailability.

The chi-square test in the above table examines those paradoxical relationships between perceived value and customers' switching behavior pattern. It can be seen from the table that the level of significance is .000 at ($p<.05$). Based on this result, we may not reject the alternative hypothesis, meaning perceived value plays a paradoxical role in customer's switching behavior. Also, in the symmetric measure table, we can measure the association between the independent variable and dependent variable. The Phi and Cramer's V indicates a almost strong relationship between these two variable.

H5: Perceived Service quality has a impact on the continuance intentions of the mobile telecom users.(Specifically in their switching behavior, loyalty and promoting tendency)

Table 6.12.1*Switching behavior*

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	734.595[a]	36	.000
Likelihood Ratio	344.072	36	.000
N of Valid Cases	932		

a. 7 cells (18.9%) have expected count less than 5. The minimum expected count is .15.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.888	.000
	Cramer's V	.362	.000
N of Valid Cases		932	

Table 6.12.2*Loyalty*

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	351.323[a]	36	.000
Likelihood Ratio	250.567	36	.000
N of Valid Cases	932		

a. 21 cells (42.9%) have expected count less than 5. The minimum expected count is .17.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.614	.000
	Cramer's V	.251	.000
N of Valid Cases		932	

Table 6.12.3 *Promoting tendency*

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	431.103[a]	36	.000
Likelihood Ratio	270.020	36	.000
N of Valid Cases	932		

a. 9 cells (28.9%) have expected count less than 5. The minimum expected count is .10.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.680	.000
	Cramer's V	.278	.000
N of Valid Cases		932	

The above mentioned hypotheses were assuming the service quality creating an impact on mobile telecom customers' continuance intention. By continuance intention, the three variables are the subject matter of this research. They are: Switching behavior, loyalty and net promoting tendency. For all the variables chi square test were performed to check their significance. Based on the P vales of all variables, the hypothesis proves significant. Meaning, service quality has direct impact on customers' switching behavior, loyalty and net promoting tendency. Also, in the symmetric measure the phi value indicates a strong relationship among all these variables with service quality.

H6: Satisfaction has a positive impact on mobile telecom customer's overall continuance intentions

Table 6.13

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	322.086[a]	30	.000
Likelihood Ratio	178.047	30	.000
N of Valid Cases	932		

a. 11 cells (32.2%) have expected count less than 5. The minimum expected count is .11.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.453	.000
	Cramer's V	.185	.000
N of Valid Cases		932	

Based on the above table data, it can be concluded that Satisfaction has a positive impact on mobile telecom customers' overall continuance intention and we may accept the hypothesis. From the symmetric measures the phi value indicates a moderate relationship between those variables rather than a strong relationship.

6.4 Section 3:

6.4.1 Factor Analysis:

When a theory exists about an underlying structure or when the researcher aims at understand an underlying structure, factor analysis is often employed (Tabachnick and Fidell, 2007). In this case, scholars believe that responses for various different questions were driven by just a few underlying structures named factors. There are two types of factor analysis: exploratory factor analysis(EFA) and confirmatory factor analysis (CFA) (Hair et al., 2006; Pallant, 2007; Tabachnick and Fidell, 2007). Exploratory factor analysis is a statistical approach that can be used to achieve two main results; data summarizing and data reduction (Tabachnick and Fidell, 2007; Hair et al., 2006). Data summarizing aims to locate appropriate structure of the research

variables under the specific logic factors (Tabachnick and Fidell, 2007; Hair et al., 2006). Data reduction is a process used to remove uncorrelated items and reduces the number of items within each variable (Tabachnick and Fidell, 2007; Pallant, 2007). Thus, factor analysis were employed in the current study. In the following section, EFA is discussed in details, while their results are later presented in this chapter.

6.4.2 Exploratory factor analysis:

The aim of EFA in the current study was data reduction of the entire sample (to purify the scale) and to ascertain whether the survey questions loaded on their respective dimensions (this was refined and confirmed later by CFA). Pallant (2007) identified three basic phases in conducting exploratory factor analysis as follows:

Step 1: Conditions Necessary for EFA

There are a number of issues that were considered in using exploratory factor analysis (these issues are necessary conditions for most multivariate analysis techniques). Those issues are related to sample size, factorability of R (strength of the relationship among the variables), Examination of the co-relation matrix, missing data, outliers, linearity, normality, multicollinearity and homoscedasticity (Tabachnick and Fidell, 2007; Pallant, 2007).

A) Sample size: The first issue is concerned with assessing the adequacy of the sample size for exploratory factor analysis. There is no agreement among scholars regarding how large a sample should be; the recommendation generally is: the larger, the better (Tabachnick and Fidell, 2007; Hair et al., 2006; and Pallant, 2007). In a small sample, the correlation coefficients between the variables are less reliable, tending to vary from sample to sample. Moreover, factors obtained from small data sets cannot be generalized as well as those derived from larger samples (Pallant, 2007). Tabachnick and Fidell (2007:613) concluded that "it is comforting to have at least 300 cases for factor analysis". However, a smaller sample size (e.g. 150 cases) should be sufficient if high loading marker variables exist (above 0.80). Some authors suggest that it is not the overall sample size that is of concern, but the ratio of cases to items (Pallant, 2007). Nunnally (1978) recommends a 10 to 1 ratio; that is, ten cases for each item to be factor analysed. Others suggest that five cases for each item are adequate in most cases (Hair et al., 2006). The current study contains 52 indicators (items) measuring 11 main constructs; therefore, sample size of 932 can be considered a good number of sample size for running EFA.

B) Factorability of R: The second issue concerns the factorability of R (strength of the inter-correlations among the items). Tabachnick and Fidell (2007) suggest an inspection of the correlation matrix for evidence of coefficients greater than 0.3. If few correlations above this level exist, factor analysis may not be suitable.

Two statistical methods are also provided by the SPSS package to test the factorability of the data set: 1. Bartlett's test of sphericity (Bartlett 1954), and the 2. Kaiser Meyer- Olkin (KMO) measure of sampling adequacy (Kaiser 1970, 1974). Bartlett's test of Sphericity should be significant ($P < 0.05$) for the factor analysis to be appropriate. The KMO index ranges from 0 to1 with 0.6 suggested as the minimum value for a good factor analysis (Tabachnick and Fidell 2007). The index ranges from zero to one, reaching one when each variable is perfectly predicted without error by other variables (Hair et al., 1998). Kaiser and Rice (1974) give the following calibration of the MSA: 0.90+ (marvellous); 0.80+ (meritorious); 0.70+ (middling); 0.60+ (mediocre); 0.50+ (miserable); below 0.50 (unacceptable).

C) Examination of the correlation matrix: Calculating a correlation a matrix of all variables of interest is the starting point for factor analysis. This is the simplest method for determining the appropriateness of factor analysis (Hair et al., 2006). If the objective of the research is to summarize the characteristics, factor analysis can be utilized on a correlation matrix of the variables (Hair et al., 2006). Hair et al. (2006) propose that factor analysis is appropriate if visual inspection reveals most of a substantial number of correlations to be greater than 0.30. However, factoring may be inappropriate if the correlation coefficients are small throughout the matrix (Stewart, 1981).

With respect to the correlation matrix, two things are important: the variables have to be inter correlated, but they should not correlate too highly (extreme multicollineriaty and singularity) as this would cause difficulties in determining the unique contribution of the variables to a factor (Field 2000: 444). In SPSS the inter correlation can be checked by using Bartellet's test of Spheity, which "tests the null hypothesis that the original correlation matrix is an identity matrix" (Field 2000: 457). This test has to be significant: when the correlation matrix is an identitiy matrix, there would be no correlations between the variables. Multicollineriaty, then , can be detected via the determinant of the correlation matrix, which can also be calculated in SPSS: if the determinant is greater than 0.00001 then there is no muticollinerity. (Field 2000: 445)

D) Missing Data: The next issue concerns with missing data. Missing data is "information not available for a subject (or a case) about whom other information is available; it often occurs when a respondent fails to answer one or more question in a survey " (Hair et al., 2006:34). Missing data can generate difficulties in data analysis and can have dramatic effects on the research results. It can occur randomly or in some systematic pattern (e.g. lots of respondents refuse give answers about income and women failing to answer the question about their age) (Pallant, 2007).

The options button in SPSS statistical procedures gives three choices for how to deal with missing data: (1) Exclude cases listwise: this option includes cases in the analysis only if full data

on all variables exist; (2) Exclude cases pairwise: this option excludes the case only if it is missing the data that is required for a specific analysis; it still will be included in any analyses for which it has the required information; (3) Replace with mean: this option will calculate the mean value of the variable and gives every missing case this value (Pallant, 2007). However, in the current study only a few data points, about, 5% or less, are missing in a random pattern. Therefore, the problems that associated with missing data are less serious and almost any procedure for handling missing values yields similar results (Tabachnick and Fidell, 2007). In this study 12 uncompleted questionnaires were excluded due to an extreme number of unanswered questions and then both exclude cases listwise and excludes cases pairwise methods were separately used to deal with any missing values and the result in both cases was zero per cent.

E) Outliers: Regarding the outliers, an outlier is a case with such an extreme value on one variable (a univariate outlier) or such a strange combination of scores on two or more variables (multivariate outlier) that it distorts statistics (Tabachnick and Fidell, 2007:72).

According to Hair et al. (2006), there are four main reasons for the existence of an outlier in the research sample. First: derived from incorrect data entry. Cases that are extremely high or low should be checked carefully to make sure that data are correctly entered. Second: derived from extraordinary events which explain the uniqueness of the observation; the decision to delete or retain this type of outlier depends on whether it matches with the research objectives or not. Third; derived from extraordinary events which are unexplained by the researcher; the decision to delete or retain this type of outlier depends on the researcher's judgment. The fourth and final class of outliers contains observations that fall within the ordinary range of values in each variable; these observations are not particularly high or low but are unique in their combination of values across the variables. In that case the observation should be retained unless certain evidence is available that discounts the outlier as a valid member of the population.

The boxplot in SPSS package can be used to detect outliers -Cases that are extremely high or low- (Tabachnick and Fidell, 2007). Any values that SPSS considers as outliers emerge as little circles with an attached number (Pallant, 2007).

F) Normality: Regarding the normality issue, normality is used to "describe a symmetrical, bell-shaped curve, which has the greatest frequency of scores in the middle, with smaller frequencies towards the extremes (Pallant, 2007:57). Univariate normality for the individual variables can be tested by reviewing the graphs such as histogram, and normal probability plots (Hair et al., 2006; Tabachnick and Fidell, 2007; Pallant, 2007). Frequency histograms can also be used for assessing normality, particularly with the normal distribution as an overlay (Griffith, 2010). It there is regularly a pileup of values near the mean with values trailing away in either direction, univariate normality of the variable would be met (Tabachnick and Fidell, 2007).

Normal probability plots (Normal Q-Q plots) can also be used (Tabachnick and Fidell, 2007). In Normal Q-Q plots, the scores are sorted and ranked and then an expected normal value is calculated and compared for each case with the actual normal value. In a Normal Q-Q Plot, the observed value for each single score is plotted against the expected value from the normal distribution; a reasonably straight line implies a normal distribution (Pallant, 2007). It is claimed that the negative effect of non-normality can be serious in small sample size (less than 50 cases), while with a larger sample size (the current study sample size is 288) the negative effect of non-normality may be negligible (Tabachnick and Fidell, 2007; and Hair et al., 2006).

In this study, the shapes of the distribution (through Normal Q-Q Plot) are inspected for normality, while the skewness and kurtosis values are visually inspected rather than calculate their significance as recommended by Field (2006); Pallant (2007); Stevens (2009); and Tabachnick and Fidell (2007) .

G)Multicollinerity and Homoscedasticity: The final issues are regarding multicollinerity and homoscedasticity. Multicollinearity occurs when the independent variables are highly correlated (r=.9 and above), while homoscedasticity reflects the presence of equal variances, where, the variability in scores for variable X should be similar at all values of variable Y. This can be ascertained through checking the scatter plot where a fairly even cigar shapes should be shown (Pallant, 2007). It is important because the variance of the dependent variables should be equally dispersed across the range of the independent values to allow a fair analysis of the relationship across all values (Hair et al., 2006). The existence of multicollinearity or homoscedasticity will not contribute to a good research model (Pallant, 2007).

Step 2: Factor Extraction

Factor extraction involves determining the smallest number of factors which can be extracted to best represent the interrelations among the set of variables (Pallant, 2007). There are a variety of procedures for factor extraction, such as principal components, principal factors, maximum likelihood factoring, image factoring, alpha factoring, and unweighted and generalized (weighted) least squares factoring (Field, 2006; Hair et al., 2006; Tabachnic and Fidell, 2007). Principal components and principal factors are the most commonly used approaches (Hair et al., 2006; and Tabachnic and Fidell, 2007) Principal components is used when the objective is to summarize most of the original information (variance) in the minimum number of factors for prediction purposes, whereas principal factors is used primarily to identify underlying factors or dimensions that reflect what the variables share in common (Field, 2006; Hair et al., 2006; Tabachnic and Fidell, 2007).

It is up to the researcher to decide the number of factors that is thought best describes the underlying correlation among the variables. This entails balancing two conflicting needs: the

need to find a simple solution with as few factors as possible; and the need to explain as much of the variance in the original data set as possible (Pallant, 2007). Tabachnick and Fidell (2007) suggest adopting an exploratory approach, experimenting with different numbers of factors until a satisfactory solution is found.

Several techniques were tested in this study to assist in the decision regarding the number of factors to maintain including communalities: Kaiser's criterion (eigenvalue rule), percentage of variance, and scree plot (Tabachnick and Fidell, 2007; Pallant, 2007; and Hair et al., 2006). Stewart (1981) suggests that the decision regarding the number of factors to be extracted generates more controversy and misunderstanding than any other issues regarding factor analysis. Latent root criterion, percentage of variance criterion, and scree test criterion are three common criteria used by researchers for factor extraction (Hair et al., 2006).

1***. Latent root criterion***: The rationale of latent root criterion or the Kaiser's criterion or eigenvalue rule is one of the most frequently used techniques in EFA. Using this rule, only factors with an eigenvalue of 1.0 or more can be retained for further investigation (Pallant, 2007). The eigenvalue of a factor represents the amount of the total variance explained by that factor. Moreover using eigenvalue for establishing a cut-off is most reliable when the number of variables is between 20 and 50 (Hair et al., 2006). Communality is a measure of the correlations between an original variable and all other variables in the analysis (Field, 2006; Hair et al., 2006). Communality values can range from 0 to 1, where 0 indicates that the common variance factors explain none of the variance, and 1 indicates that all the variance is explained by the common factors (Hair et al., 2006).

2. ***Percentage of Variance Criterion***: The purpose of percentage of variance criterion is to ensure practical significance for the derived factors by ensuring that they explain at least a specified amount of total variance (Hair et al., 2006). The percentage of variance criterion is a technique based on achieving a specified cumulative percentage of total variance extracted by successive factors (Hair et al., 2006). In natural science, 95% of the total cumulative variances represent a satisfactory threshold to accept an EFA solution. In contrast, in social science where information is often less precise, the satisfactory cut-off point is 60% or less (Hair et al., 2006).

3. ***Scree Test Criterion:*** Another approach that can be used is Catell's scree test (Catell, 1966). This entails plotting every one of the eigenvalues of the factors and checking the plot to locate a point at which the shape of the curve changes path and becomes horizontal (Tabachnick and Fidell, 2007; Pallant, 2007 ; and Hair et al., 2006). Catell (1966) recommended maintaining all factors above the elbow, or break in the plot, as these factors contribute the most to the justification of the variance in the analyzed data set. Stewart (1981, pg.58) explains the procedure of scree test as follows: —"A straight edge is laid across the bottom portion of the roots to see where they form an approximately straight line. The point where the factors curve

above the straight line gives the number of factors, the last factor being the one whose eigenvalue immediately proceeds the straight line. "(Stewart, 1981)

Step 3: Factor Rotation and Interpretation

Once the number of factors has been identified, the next stage is to interpret them. To assist in this process, the factors are rotated (Pallant, 2007). This rotation does not change the underlying explanation, but presents the pattern of loadings in a way that is easier to be interpreted (Tabachnick and Fidell, 2007). SPSS does not name or interpret these factors per se but it gathers all variables that are correlated together (Hair et al., 2006).

There are two main approaches of rotation, either orthogonal (uncorrelated) or oblique (correlated) (Tabachnick and Fidell, 2007; Pallant, 2007; and Hair et al., 2006). **Orthogonal rotation** results in solutions that are easier to be interpreted and reported; however, they do need to assume (usually incorrectly) that the underlying constructs are independent of each other (not correlated). The **oblique approaches** let the factors be correlated, but are more difficult to be interpreted and report (Tabachnick & Fidell 2007). In practice, the two approaches (orthogonal and oblique) frequently produce similar results, especially when the pattern of association among the items is clear (Tabachnick and Fidell 2007; Pallant, 2007). Several researchers perform both orthogonal and oblique rotations and then report the clearest and easiest to interpret. Within the two broad categories of rotational approaches there are a number of different rotational techniques provided by SPSS (orthogonal: Varimax, Quartimax, Equamax; oblique: Direct Oblimin, Promax).

Orthogonal factor rotation methods are the most widely used rotational methods (Hair et al., 2006). Orthogonal factor rotation is a factor rotation where the factors are extracted so that their axes are maintained at 90 degrees (Hair et al., 2006). Each factor is independent of, or orthogonal to, all other factors. The correlation between the factors is determined to reach zero (Hair et al., 2006). Hair et al. (2006) state that three major orthogonal approaches have been developed: VARIMAX, QUARTIMAX and EQUIMAX.

VARIMAX is the most popular orthogonal factor rotation method focusing on simplifying the columns in a factor matrix (Hair et al., 2006). Pohlmann (2007) notes that the VARIMAX rotational approach maximizes the variance of the squared elements in the columns of a factor matrix. Through VARIMAX, the maximum possible simplification will be reached if there are only ones and zeros in a column (Hair et al., 2006). When the correlation is close to positive or negative one, this approach can be interpreted as a highly positive or negative association between the variable and the factor (Hair et al., 2006). VARIMAX indicates a lack of association when the correlation is close to zero (Hair et al., 2006).

QUARTIMAX is a form of orthogonal rotation used to rotate the original principal component or factor vectors into a new set intended to approximate simple structure used either to simplify the interpretation of the principal components or factors or to cluster the original variables (Jackson, 2005). The primary goal of using this method is to simplify the rows of a factor matrix (Hair et al., 2006). QUARTIMAX mainly focuses on rotating the initial factor so that a variable loads highly on one factor and as low as possible on all other factors (Hair et al., 2006). Through QUARTIMAX, many variables can load highly or nearly highly on the same factor because the technique centers on simplifying the rows (Hair et al., 2006).

The EQUIMAX approach is a compromise between the VARIMAX and QUARTIMAX approaches (Hair et al., 2006). Rather than concentrating either on simplification of the rows or on simplification of the columns, EQUIMAX attempts to accomplish some of each (Hair et al., 2006). EQUIMAX, however, has not had widespread acceptance and is not suggested as a common approach to data analysis (Hair et al., 2006).

In addition to the orthogonal approaches, oblique factor rotation derives factor loadings based on the assumption that the factors are correlated and this is probably most likely true for most measures (Newsom, 2005). This rotation gives the correlation between the factors in addition to the loadings. Newsom (2005) proposes two common methods of oblique factor rotation: OBLIMIN and PROMAX.

OBLIMIN, also known as simple structure, is referred to as the rotated factor loadings matrix (Garson, 2007). This approach is the standard method when researchers desire a non-orthogonal (oblique) solution, namely, one in which the factors are allowed to be correlated (Garson, 2007). This method contributes to higher eigenvalues; however, it will also diminish the interpretability of the factors (Garson, 2007).

PROMAX is an alternative non-orthogonal (oblique) rotation method that is computationally faster than the OBLIMIN method (Garson, 2007). In addition, this rotation is applied, at times, to large datasets (Garson, 2007). The factor loadings for the PROMAX oblique rotation represent the way each of the variables is weighted for each factor (UCLA Academic Technology Services, 2007a). PROMAX rotation allows the factors to be correlated when researchers attempt to produce an approximate, simple structure to have a better performance (UCLA Academic Technology Services, 2007a).

As recommended by Tabachnick and Fidell (2007); Pallant (2007); and Hair et al. (2006), the current study employed the most commonly used orthogonal approach, the Varimax method, which aims to minimize the number of variables that have high loadings on each single factor. Comfrey (1973) suggested useful guidelines for this purpose where any loadings greater than ± 0.71 is excellent, ± 0.63 is very good, ± 0.55 is good, ± 0.45 is fair, and ± 0.32 is poor. In this

study, loading below 0.4 was ignored, because higher loading provides a clearer guide to what the factor is measuring (Rees, 1996).

6.5 Results of Exploratory Factor Analysis (EFA)

The results of EFA are presented following three main phases as explained in this section.

Step 1: Conditions necessary for EFA

A) Sample size: The current study contains 52 indicators (items) measuring 11 main constructs; therefore, sample size of 932 can be considered a good number of sample size for running EFA according to Tabachnick and Fidell (2007).

B) Factorability of R: Two statistical methods are also provided by the SPSS package to test the factorability of the data set: 1. Bartlett's test of sphericity (Bartlett 1954), and the 2. KaiserMeyer- Olkin (KMO) measure of sampling adequacy (Kaiser 1970, 1974).

1. ***Bartlett's test of sphericity*** is significant which supports the factorability of the data set and implies the presence of non-zero correlation among the items and a high level of homogeneity among variables. It also tests whether the correlation matrix is an identity matrix (factor analysis would be meaningless with an identity matrix). A significance value <.05 indicates that these data do NOT produce an identity matrix (or '' differ significantly from identity '') and are thus approximately multivariate normal and acceptable for factor analysis.(Field, 2006).

In this result, Bartlett's test of sphericity shows an approximate Chi square of 11174.010 with 435 df and significance 0.000 (see Table 4.1). Which shows that these dataset differ significantly from an identity matrix, and acceptable for conducting a factor analysis.

2. ***Kaiser-Meyer-Olkin (KMO)*** is a measure of whether your distribution of values is adequate for conducting factor analysis. Kaiser himself designates levels as follows: A measure >.9 is marvelous, >.8 is meritorious, >.7 is middling, >.6 is mediocre, >.5 is miserable, and <.5 is unacceptable. (George, Mallery; 2006) ** SPSS for Windows Step by Step

In this result, the overall measure of sampling adequacy (KMO) is 0.893 represents almost to the marvelous category and which is higher than the cut-off point of 0.6 as recommended by Field (2006) and Hair et al. (2006). Overall, these data satisfy the fundamental requirements for factor analysis (Hair et al., 2006)

Table 6.14: KMO and Battlet's test for EFA.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.893
Bartlett's Test of Sphericity	Approx. Chi-Square	11174.010
	Df	435
	Sig.	.000

C) Examination of the correlation matrix: The visual inspection of the correlation matrix (See Appendix) showed that there were many substantial correlations above 0.30 as suggested by Pallant (2007). Also, with respect to the correlation matrix, two things are important: the variables have to be intercorrelated, but they should not correlate too highly (extreme multicollineriaty and singularity) as this would cause difficulties in determining the unique contribution of the variables to a factor (Field 2000: 444). Thus, this indicated that the items shared common factors and were therefore suitable for factor analysis.

D) Missing Data and Outliers: In this study 12 uncompleted questionnaires were excluded due to an extreme number of unanswered questions and then both exclude cases listwise and excludes cases pairwise methods were separately used to deal with any missing values and the result in both cases was zero per cent. In case of outlier detection, scatter plot was used in preliminary analysis for major variables and no major outlier was found.

E) Normality and Muticollinerity: Data were checked for the skewness and kurtosis, and the values were visually inspected rather than calculate their significance as recommended by Field (2006); Pallant (2007); Stevens (2009); and Tabachnick and Fidell (2007). The primary analysis shows that the data were normal, and reasonable for conducting factor analysis.

If the determinant is greater than 0.00001 then there is no muticollinerity((Field 2000: 445). In this analysis the determinant is 8.03 which is more than the cut-off value. 0.00001. Also, looking into the Eigen value, if it is zero or lower than some epsilon, the issue of multicollinerity arise. In this analysis the overall Eigen value (See Appendix) is satisfactory and proves that these data are free from multicollinerity issue.

Step 2: Factor Extraction

The current study employed the two most common approaches for factor extraction, principal components and principal axis factors (Hair et al.,2006; and Tabachnic and Fidell 2007). Moreover, varimax orthogonal rotation is employed to get the best and the clearest solutions. The above mentioned two approaches yield the same results, Kaiser's criterion (eigenvalue value of 1.0 or more), percentage of variance (satisfactory cut-off point is 60%), and scree plot (checking the plot to locate a point at which the shape of the curve changes path and becomes horizontal) are

employed to assist in the decision regarding the number of factors to maintain including communalities (Tabachnick and Fidell, 2007; Pallant, 2007 ; and Hair et al., 2006). So, for the final conclusion used in this study Varimax method was considered for final interpretation.

Step 3: Interpretation of EFA results

The results of the EFA with principal components factor extraction methods are presented below. The results of the EFA with principal factor axis extraction methods can be visually inspected in Table 4.7 to provide more evidence and confidence to the yielded results.

The exploratory factor analysis produces a eight-factor solution, indicating: customer care/help services, network/ value added service performances, switching barriers, brand image/ trust, customer loyalty, call rate, continuance intention and value added services. This is supported by the scree plot test and correspondence with the quality management literature. An eight-factor structure is suggested using the criterion of an eigenvalue greater than 1 and the extracted factors account for 66.47% per cent of the total variance. Table 4.7 contains a summary of the descriptive statistics, factor analysis and reliability analysis for service quality provided by the telecom operators in Bangladesh. Hair et al. (2006) recommended that a sample size of approximately 350 and factor loadings greater than ± 0.30 should be considered as significant. The square loading is the amount of the variable's total variance explained by the factor because a factor loading is the correlation of the variable and the factor (Hair et al., 2006). Therefore, in this study less than .40 factor loading was considered inappropriate as a part of the standard rules. For this purpose, Absolute value below .40 was chosen during conducting factor analysis as an option. Factor loadings are all higher than 0.6 on their own factors as recommended by Hair et al. (2006) except only two variables among twenty-eight variables. Since, option was pre-determined not to select any variable with loading less than 0.40, twenty-eight variables came out in the factor analysis among the fifty two variables mentioned in the questionnaire, with no cross loadings. This corresponds with the 'simple structure' view introduced by Thurstone (1947), where the researcher hopes to find each of the variables loading strongly on only one factor, and each factor being represented by a number of strongly loading variables.

Factor loadings: More specifically, the factor loadings for the retained items are as follows: customer care/help services (.80, .78, .76, .74, .73 and .58 respectively), Network and value added services performances (.72, .68, .67,.62, .60 and .47 respectively), switching barriers (.77 and .73 respectively) , Brand image/ trust (.73, .69, .66 and .64 respectively) customer loyalty (.82, .76, and .72 respectively) call rate (. 88 and .87 respectively) continuance intention (.73 and .70 respectively) and Value added services (.79 and .70) (see table 7.1).

Table: 6.15 Statistical summary: Descriptive statistics, Factor analysis (with Principal component as an extraction Method), and reliability analysis for service quality in mobile telecom industries in Bangladesh.

Factors & Variables	Descriptive Statistics		Factor Components & Loading								Reliability	
	Mean	SD	1	2	3	4	5	6	7	8	CITC	α
Customer Care/Help Services												**0.87**
C1 Willingness of the frontline employees to help you at touch points/service centers	3.33	1.47	0.80								0.77	0.83
C2 Ease of access to call center/customer care/help line	3.70	1.28	0.78								0.66	0.85
C3 Response time taken to answer your call by a customer care executive	3.87	1.32	0.76								0.70	0.85
C4 Clarity of instruction on top-up card	3.45	1.41	0.74								0.66	0.85
C5 Problem solving ability/knowledge of the customer care executives	3.51	1.5	0.73								0.7	0.85
C6 Time taken by call center/customer care/help line to resolve your complaint	4.20	1.34	0.58								0.55	0.87
Network/VAS performances												**0.83**
N1 Call success rate(Attempt to establish call)	3.54	1.05		0.72							0.67	0.79
N2 Restoration of network/ signal problem	3.72	1.39		0.68							0.55	0.82
N3 call drop frequency during conversation	3.78	1.11		0.67							0.49	0.82
N4 Voice quality	3.68	1.04		0.62							0.67	0.79
N5 Availability of signal of your service provider	3.55	1.17		0.60							0.67	0.79
N6 satisfaction with the quality of the supplementary/value added services provided	3.28	0.94		0.47							0.48	0.82
Switching Barriers												**0.73**
SB1 switching to a new operator causes monetary cost, energy, time and effort	3.91	1.08			0.77						0.58	
SB2 If I change my phone number, I would be concerned if people dial my previous number but could not reach me	4.09	0.92			0.73						0.58	

Factors & Variables	Descriptive Statistics		Factor Components & Loading								Reliability	
	Mean	SD	1	2	3	4	5	6	7	8	CITC	A
Brand Image/Trust												**0.80**
BI1 The policies and procedures of this company is trustworthy	4.02	1.39				0.73					0.65	0.72
BI2 The company delivered a good brand image to its customers	3.77	1.11				0.69					0.66	0.72
BI3 current mobile operator is very responsible to the social responsibility	3.88	1.33				0.66					0.59	0.75
BI4 The service process provided by this operator is secure	3.91	1.18				0.64					0.52	0.78
Customer Loyalty												**0.82**
CL1 I will encourage friends and relatives to use the services offered by this operator	3.52	1.05					0.82				0.75	0.67
CL2 I am willing to say positive things about this operator to other people.	3.52	1.09					0.76				0.64	0.77
CL3 To me, my current operator clearly is able to provide the best service	3.74	1.15					0.72				0.62	0.80
Call rate												**0.90**
CR1 satisfaction with the accuracy of charges i.e. amount deducted on every usage	2.97	1.15						0.88			0.83	
CR2 satisfaction with the calling rate offered by the operator	2.91	1.17						0.87			0.83	
Continuance Intention												**0.70**
CI1 not satisfied with existing service quality, but for switching cost issue will continue the exiting operator's service	3.63	1.10							0.73		0.54	
CI2 Even if another price is lower, I will go on using this provider	3.49	1.19							0.70		0.55	

Factors & Variables	Descriptive Statistics		Factor Components & Loading								Reliability	
	Mean	SD	1	2	3	4	5	6	7	8	CITC	α
Value Added Services												**0.38**
VAS1 clear satisfaction with the service provider's explicit consent before providing the chargeable value added services	1.34	0.48								0.79	0.23	
VAS2 use of value added services like 3G, roaming, ring tone, GPRS, e-mail, voice mail or any other such services	1.57	0.5								0.70	0.23	

6.6 Data Reliability:

Additionally, composite Cronbach Alpha value scores for the eight factors reflect satisfactory internal consistency for those items. The reliability scores (Cronbach Alpha or α) for five constructs out of eight (customer care/help services, network/ value added service performances, , brand image/ trust, customer loyalty, call rate, and) exceed .80 . Value added services (see Table 4.1),Switching barriers and continuance intention scores .73 and .70 respectively, which is above the usual cut-off level of 0.7 as recommended by Nunnally and Bernstein (1994). Only Value added services scores lower which is .38 but with high loading factor. Moreover, the Corrected Item- Total Correlation (CITC) was used as one indicator of internal consistency among variables' items which reflects the degree of correlation between each item and the total score. CITC is used to evaluate whether all measures demonstrated a dominant loading on the hypothesized factor and did not have significant cross-loadings. The results of CITC ranged from 0.48 to 0.83. Again, only with the exception of Value added services, which is .23 for both variables. Overall results are satisfactory and are above the threshold of 0.4.as recommended by Nunnally and Bernstein (1994). See table 4.1 for each construct and variable in terms of reliability.

6.7 Section 4: Multiple Regression Analysis

Multiple regression is actually a simplified term of the ordinary least squares (OLS) multiple regression, as this method was based on the technique of finding the "best" estimators with the least squared errors (Gujarati, 2002). The OLS multiple regression analysis is perhaps one of the most popular and most commonly used prediction techniques in diverse fields of social science due to its vast advantages. Multiple regressions analysis is good at finding the best prediction equation for a set of variables, i.e., given X and Y (predictors), what was Z (dependent variable). It provided a coefficient of determination (denoted R2) to describe the goodness of fit of the model, and a single F value to describe whether the whole equation is statistically significant. In addition, it had the strength of controlling for confounding factors to evaluate the effect of a specific independent variable. Actually, "the effect of a particular independent variable is made more certain, for the possibility of distorting influences from other variables is removed" (Lewis-Beck, 1980, p. 47). In this case that the influence of other variables was controlled, the effect of any particular independent variable was called "partial effect."

Multiple regression analysis was utilized to empirically test five equation models; the effect of telecom customer's perceived value on service quality. Customer satisfaction on service quality, Continuance intention and their net promoting tendency. These five models were covered by hypothesis 1 through hypothesis 6 derived from the conceptual framework. In these five models, perceived value, customer satisfaction, switching behavior, loyalty, Promoting tendency, Continuance intention and Net promoting tendency served as the dependent variables respectively.

However, this technique had to meet a number of assumptions, which were sometimes ignored by analysts in the real world. These assumptions included (Berry, 1993;Gujarati, 2002):

1) X values independent of the error terms (covariance was zero);
2) Zero mean value of disturbance;
3) Number of observations (n) greater than the number of parameters to be estimated;
4) No exact collinearity between the independent variables;
5) No specification bias (or error) such as omitting a variable or adding an irrelevant variable in equation.

Moreover, as a rule of thumb, there should be at least 20 times more cases than the number of independent variables (Gujarati, 2002). The number of respondents included in each single satisfaction model met this requirement. The author diagnosed and fixed (if detected) the violations of these assumptions, i.e., the problems of multicollinearity, specification error, and heteroscedasticity (Berry & Feldman, 1985; Gujarati, 2002) in all of the models based on multiple regression analysis.

The following equations was created to test the hypotheses which was created based on the conceptual model. They are:

Equation 1 : Regressing customer perceived value on service quality.

$$PV = \beta_0 + \beta_1 SQ + \varepsilon$$ ----------(1)

Equation 2: Regressing customer satisfaction on service quality.

$$CS = \beta_0 + \beta_1 SQ + \varepsilon$$ ---------- (2)

Equation 3 : Regressing customer's continuance intention (the dependent variable) on Perceived value. (Continuance intention = 1. Switching intention,2. loyalty,3. Promoting tendency)

$$SB = \beta_0 + \beta_1 PV + \varepsilon$$----------(3.1)

$$LO = \beta_0 + \beta_1 PV + \varepsilon$$ ---------- (3.2)

$$PT = \beta_0 + \beta_1 PV + \varepsilon$$ ---------- (3.3)

Equation 4: Regressing Continuance intention (the dependent variable) on Service quality.

$$CI = \beta_0 + \beta_1 SQ + \varepsilon$$ ---------- (4)

Equation 5: Regressing Net Promoting intention (the dependent variable) on service quality and customer satisfaction.

$$NPI = \beta_0 + \beta_1 SQ + \beta_2 CS + \varepsilon$$ ----------(5)

Interpretation of Regression Output: By using the statistical software SPSS 20 the above mentioned regression equation were tested. The output of those regressions are presented in the following table with their interpretation.

Table 6.16.1: Regression estimates of equation 1.

Equation	Independent variable	Dependent Variable	Regression Coefficients Unstandardized	Regression Coefficients Standardized	t - Value	Sig.
Eq.1	Satisfaction with charges	Perceived Value	0.142	0.148	4.5766	0
	Helpline efficiency	Perceived Value	0.112	0.138	4.447	0
	Availability of Signal	Perceived Value	0.261	0.279	6.559	0
	Call drop Frequency	Perceived Value	-0.204	-0.208	6.398	0
	Call Success Rate	Perceived Value	0.2	0.181	4.436	0
**** R square = .342 ** Adjusted R Square = .337 *** F= 77.530***						

For Equation 1 , as predicted , these results shows that all the variables mentioned in the category of Service quality was significantly associated with perceived value($P < .05$). The Overall service quality elements, (mentioned as in dependent variable) explained approximately 34% of the variance in perceived value.

On the above equation, all the variables in service quality indicated that when regressed directly on perceived value, all the elements in service quality has moderate significant weight. Comparatively, Signal availability (.28), call drop frequency (.21), call success rate (.18) and call charge/rate (.15) showed a high coefficient value than help line frequency (.14). Which means that all of these variables have a positive relationship on Perceived value.

Table 6.16.2: Regression estimates of equation 2.

Equation	Independent variable	Dependent Variable	Regression Coefficients Unstandardized	Regression Coefficients Standardized	t - Value	Sig.
Eq.2	Call Rate	Customer Satisfaction	0.186	0.249	4.652	0
	Voice Quality	Customer Satisfaction	0.258	0.283	3.227	0.002
	Call Success Rate	Customer Satisfaction	0.084	0.102	2.54	0
	Call drop frequency	Customer Satisfaction	-0.122	-0.158	2.944	0
*** R square = .379 ** Adjusted R Square = ..373 ***F=72.698**						

For Equation 2,All the variables in service quality mentioned in the model are significantly associated with Customer satisfaction at 95% significant level (P < .05). All the variables in service quality was accounted for 37% variance meaning that 37% of the variation in customer satisfaction can be explained by the independent variable, which is service quality. The above table shows that, Call rate and voice quality (.25, .28 respectively) has a higher β value compared to call success rate and call drop frequency on customer satisfaction.

The overall results show that all of these variables in service quality have a significant positive effect on customer satisfaction. Increased levels of customer satisfaction in mobile telecom industry in our country can be achieved by increasing the mentioned elements in service quality.

Table 6.16.3: Regression estimates of equation 3.

Equation	Independent variable	Dependent Variable	Regression Coefficients Unstandardized	Regression Coefficients Standardized	t - Value	Sig.
Eq.3.1	Service worthy	Switching cost & Continuance Intention	0.184	0.193	5.461	0
	Customer Satisfaction	Switching cost & Continuance Intention	0.244	0.268	5.323	0
	Good Brand Image	Switching cost & Continuance Intention	0.18	0.182	4.044	0
**** R square = .322 ** Adjusted R Square = .298***F=50.721***						
Equation	**Independent variable**	**Dependent Variable**	**Regression Coefficients Unstandardized**	**Regression Coefficients Standardized**	**t - Value**	**Sig.**
Eq.3.2	Service worthy	Loyalty	0.215	0.21	6.076	0
	Customer Satisfaction	Loyalty	0.156	0.111	3.256	0.001
	Good Brand Image	Loyalty	0.161	0.149	4.041	0
	Secure Service	Loyalty	0.172	0.168	4.64	0
**** R square = .250 ** Adjusted R Square = .256***F=59.084***						
Equation	**Independent variable**	**Dependent Variable**	**Regression Coefficients Unstandardized**	**Regression Coefficients Standardized**	**t - Value**	**Sig.**
Eq.3.3	Service Valuable	Promoting Tendency	0.198	0.202	5.837	0
	Service Worthy	Promoting Tendency	0.101	0.11	3.272	0
	Customer Satisfaction	Promoting Tendency	0.427	0.345	10.305	0
**** R square = .292** Adjusted R Square = .289***F=92.353***						

For Equation 3, All of the dependent variables that is, Switching Behavior& continuance intention(eq.3.1), Loyalty (eq.3.2) and promoting tendency (eq.3.3) shows statistical

significance with at P-value= 0.000 on customer's perceived value. Almost each and every β coefficient was not equal to zero and was significant. Switching behavior & continuance intention showed 30%, Loyalty 26% and Promoting tendency showed 30% variance on customer's perceived value. Among the independent variables, customer satisfaction (.35), worthy service (.21) and valuable service (.20) showed a higher β value on customer's perceived value. The overall results show that Customer's perceived value have a significant positive effect on customer's switching behavior and intention, their loyalty and promoting tendency. If customers perceived value level can be increased in the mobile telecom industry in our country, it will have a positive effect on their continuance intention (i.e. switching behavior and intention, their loyalty and promoting tendency).

Table 6.16.4: Regression estimates of equation 4.

Equation	Independent variable	Dependent Variable	Regression Coefficients Unstandardized	Regression Coefficients Standardized	t - Value	Sig.
Eq.4	Ease of Access to help centre/customer care	Continuance Intention	0.155	0.201	5.089	0.001
	Time taken to resolve a problem	Continuance Intention	0.213	0.251	5.668	0
	Signal availability	Continuance Intention	0.244	0.288	8.605	0
**** R square = .162** Adjusted R Square = .153***F=31.546***						

For Equation 4, Based on the results appeared in eq.4, the model shows statistical significance value with a p=.000 (P < .05) level. The adjusted coefficient of determination (*Adjusted R Square)* valued .153, meaning that all the three variables accounted for 15% of the total variation in continuance intention. Almost each and every β coefficient was not equal to zero and was significant. Among the independent variables, signal availability and time taken to resolve a problem showed a higher β value (.28 and .25 respectively) on continuance intention.

Table 6.16.5: Regression estimates of equation 5.

Equation	Independent variable	Dependent Variable	Regression Coefficients Unstandardized	Regression Coefficients Standardized	t - Value	Sig.
Eq.5	Call Rate	Net Promoting Tendency	0.164	0.181	4.847	0
	Problem solving ability	Net Promoting Tendency	0.111	0.162	3.125	0
	Time taken to resolve a problem	Net Promoting Tendency	0.118	0.15	3.77	0
	Call Success Rate	Net Promoting Tendency	0.17	0.189	4.624	0
	Signal availability	Net Promoting Tendency	0.153	0.054	3.695	0
	Customer Satisfaction	Net Promoting Tendency	0.617	0.251	6.9	0
**** R square = .225** Adjusted R Square = .222***F=72.606***						

For Equation 5: All the variables in service quality mentioned in the model are significantly associated with Net promoting tendency at 95% significant level (P < .05). All the variables in service quality and customer satisfaction was accounted for 22% variance meaning that 22% of the variation in customers net promoting tendency can be explained by these independent variables, which are the components of service quality and customer satisfaction. The above table shows that, customer satisfaction (.25) has a higher β value compared to service quality components on customers net promoting tendency.

The overall results show that all of these variables in customer satisfaction and service quality have a significant positive effect on net promoting tendency. Increased levels of customer satisfaction and service quality in mobile telecom industry in our country can increase the net promoting behavior of the customers in general.

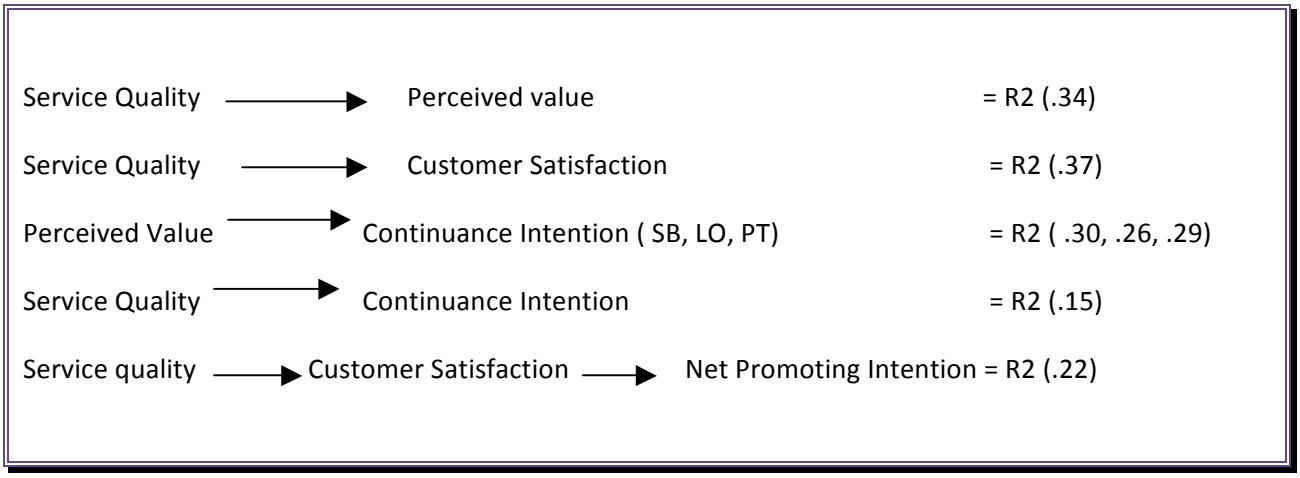


Figure 6.3: Regression Model with Adjusted R2 value.

To test the significance of the overall model of each regression equation, the overall *F*-ratio was used. Since the values ranged from 31.55 to 92.35 at a significant level of .05 (Eq. (1) =77.35, Eq.(2) = 72.70,
Eq. (3.1) =50.72, Eq. (3.2) = 59.08, Eq. (3.3) = 92.35, Eq. (4)= 31.55 Eq. (5)= 72.61), the overall models for all five regression equations were significant. To check the multicolinearity, Tolerance and VIF (Variance Inflation Factor) level was checked. For all the equations, Tolerance values ranged from (.44 to .82) which were greater than the problematic level of .10. VIF values for those variables ranged between (1.2 to 2.2) also, they are far lower than 5, which is a indicator for multicolinearity issue. Also, each equation was checked with the histogram and residual plot to check the multicolinearity, and all the results were satisfactory. (See appendix for graphs and residual plots).

These all tests justify the low value of R square and adjusted R square. In some fields, it is entirely expected that R-squared values will be low (Frost, 2013). Any field that attempts to predict human behavior, such as psychology, typically has R squared values lower than 50%. Humans are simply harder than, say physical processes. Furthermore, If R squared value is low but it has statistically significantly predictors, still important conclusions about changes in the predictor values are associated with changes in the response value (Frost, 2013).

6.8 Section 5

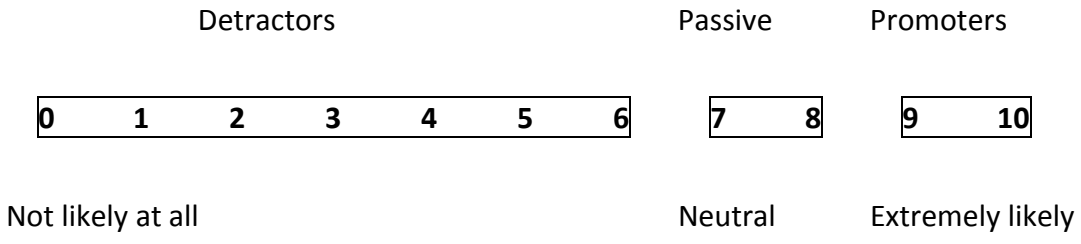
6.8.1 Finding NPS (Net Promoter Score):

The Net Promoter Score, or NPS, is based on the fundamental perspective that every company's customers can be divided into three categories: Promoters, Passives, and Detractors. By asking one simple question — How likely is it that you would recommend [your company] to a friend or colleague? Companies can track these groups and get a clear measure of their company's

performance through their customers' eyes. Customers respond on a 0-to-10 point rating scale and are categorized as follows:

- **Promoters** (score 9-10) are loyal enthusiasts who will keep buying and refer others, fuelling growth for the companies.
- **Passives** (score 7-8) are satisfied but unenthusiastic customers who are vulnerable to competitive offerings.
- **Detractors** (score 0-6) are unhappy customers who can damage your brand and impede growth through negative word-of-mouth.

To calculate a company's NPS, the procedure is followed like this: the percentage of customers who are Promoters and subtract the percentage who are Detractors.



NPS= % of Promoters- % of Detractors

Most managers became aware of Net Promoter after the release of a 2003 Harvard Business Review article titled "The One Number You Need to Grow." The overarching message of the article is that measurement of customer satisfaction and customer retention does not help firms achieve growth; instead, word of mouth is the metric that is linked to growth. However, the word-of-mouth metric must be designed in a particular way to calculate a Net Promoter score (Reichheld 2003; Word of Mouth Marketing Association [WOMMA] 2005). First, survey respondents are asked to rate their likelihood of recommending a company. Second, the proportion of respondents rating the firm a 6 or less (called "detractors") is subtracted from the proportion of respondents rating the firm a 9 or 10 (called "promoters"); this difference represents a firm's Net Promoter score. Several highly visible publications have appeared regarding Net Promoter, including an article in *MIT Sloan Management Review* (Reichheld 2006a) and a *Wall Street Journal* (2006) number-one best-selling business book, *The Ultimate Question* (Reichheld 2006c). In addition, numerous trade journal articles have featured Net Promoter (e.g., McGregor 2006; Morris 2006).

One of the main objectives of this report was to find the NPS of the different mobile telecom operators in our country. For knowing this information, while collecting the data from the

respondents, the NPS question was asked and the respondents were asked to rate their rating on the scale of 0-10 (0-6= not likely, 7-8 = Neutral, 9-10 = Extremely likely).
Based on the findings the scores are presented in the following table:

Table 6.17: Net Promoter Score of mobile telecom operators in Bangladesh

Operator	Total respondents	Promoter (9-10)	Detractors (0-6)	NPS (%P-%D)
Grameen Phone	333	121/100= 1.21%	101/100= 1.01%	0.2%
Banglalink	204	89/100=0.89%	66/100= 0.66%	(-) 0.23%
Robi	162	58/100= 0.58%	40/100= 0.40%	0.18%
Airtel	116	24/100= 0.24%	69/100= 0.69%	(-) 0.45%
Citycell	60	23/100=0.23%	14/100= 0.14%	0.09%
Teletalk	38	20/100=0 .20%	17/100=0 .17%	0.03%
	Total=913			

From the above table, Grammen phone and Robi has the higher NPS and Citycell and Teletalk has comparatively lower NPS. Banglalink and Airtel has the negative NPS, meaning their customers promoting behavior toward their operators is negative. These data are the proportionate according to the collected data.

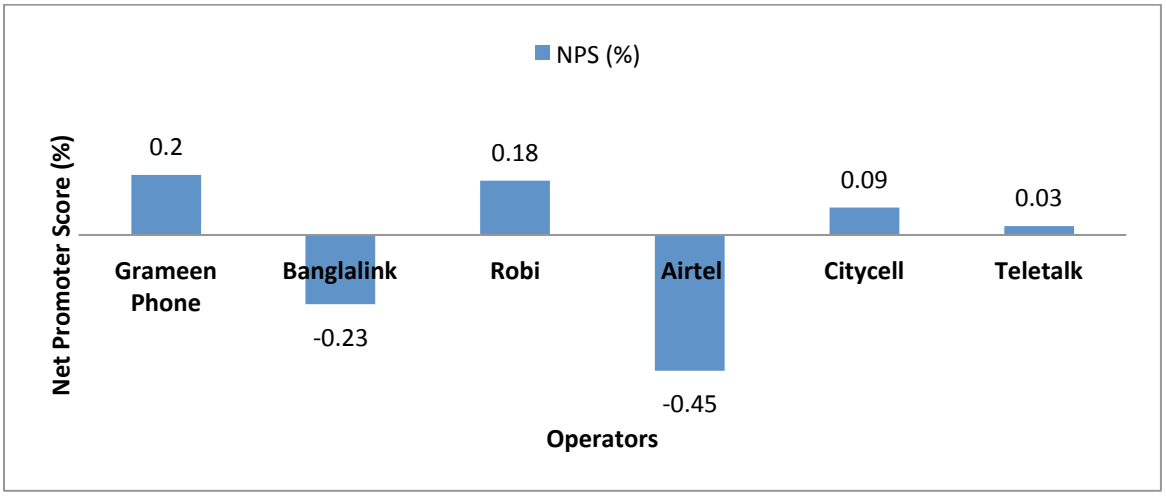


Figure 6.4: Net Promoting scores of different mobile telecom operators in Bangladesh.

Chapter Summary

The core objecitve of this chapter was to confirm the hypothesis and identify various factors identified in the research model by ensuring adequate relaibililty and validity. This study also aimed to assess the relationships among the various construct presented in the conceptual model. Furthermore, the uniqueness of the study was to identify(if any) the link between service quality and net promoting score of the various mobile operators. to serve all these objectives, this study succesfully applied different data analysis technique, i.e. chi-square, factor analysis and Multiple Regression with all justification of their appropriateness, in terms of their application in this study. The findings of this study supported all the six hypotheses that has been developed as part of the conceptual model. The factor analysis showed a high level of validity and identified some core factors which is mainly responsible for service quality issues in the mobile telecom service in our country. However, the multiple regression tried to identify more detail in terms of the assosiations among these constrcuts which was mentioned in the conceptual model. All of tehm showed positive and significnat relationship, but they differ in terms of the degree of their assosiation. They varried between low to moderate assosiation among their dependence on each other. An in-depth discussion of these results and their implications in terms of theory, methodology and practice are presented in the next chapter (Chapter 7:Discussion and Conclusions).

Chapter 7

Discussion and Conclusions

7.1 Overview:

This chapter aims to discuss empirical findings of the previous chapter in terms of theoretical significance, methodological rigor and practical contribution. The chapter briefly presents the entire findings addressing the objectives and the research questions of the study proposed in Chapter 1. The chapter also discusses how the results fill the existing knowledge gaps and make significant contributions in the context of service sector research in developing countries, particularly in Bangladesh. Specifically, the contributions highlight that the study extends knowledge by re-conceptualizing the service quality theory identifying a link among service quality, customer satisfaction and continuance intention. The chapter also discusses limitations and future research directions with concluding remarks. Overall, the objective of this chapter is to clarify contributions of the study in terms of the service quality dynamics in relation to continuance intention of mobile telecom service systems in developing country context like Bangladesh.

This chapter is designed as follows: Section 7.2 reviews the research objectives of the study. Section 7.3 briefly presents general discussion on addressing the research questions. Section 7.4 discusses contributions of the study in terms of theory and practice. Next, the study discusses limitations (Section 7.5) and future research directions (Section 7.6). Finally, Section 7.7 provides concluding remarks for the entire study.

7.2 Research Objective

The key objectives of the study were to explore service quality dimensions and to measure the impact of mobile telecom's service quality on customer's perceived value, satisfaction and continuance intentions in developing countries, particularly in Bangladesh, in order to fill the knowledge gaps in service quality research. To follow these objectives, this study utilized service quality theories and related concepts from information systems, marketing and other various services research in order to test the hypothetical relationships among constructs presented in the conceptual model. To the knowledge of the researcher till date, a very few studies has been conducted investigating the link between service quality and consumer behavior in the telecommunication industry in Bangladesh (thus, determining consumers behavioral intention to the mobile telecommunication service providers in Bangladesh), which was the main objective of this research. The researcher of this study also believes that this a pioneer study in the context of mobile telecom service in Bangladesh, which linked Service quality and its impact to Net Promotion Score, as part of academic research. The mentioned

objectives were investigated by six hypotheses as part of the conceptual model development and on the basis of the result; it is difficult to reject those hypotheses.

7.3 Discussion

Discussion Service Quality has become a very trendy and relevant issue now a days in Marketing. Business theorists and practinoners of marketing are increasingly concerned with service quality and its implication on company's performance and profitability. In many of their contemporary research, they tried to examined the effects of service quality and on consumer behavior , particularly their continuance intention, loyalty, switching pattern and promoting tendency, which are some crucial factor for company's profitability. However, these findings are not confirmed by all studies and too little data exists for adequate practical implications that can be applied in the context of Bangladesh. Hence, the following research question was proposed:

- RQ1: What are the dimensions used to evaluate the service quality level in mobile telecom industry?
- RQ2: How do these dimensions used in service quality measurement level?
- RQ3: What are the particular components that actually create the link among service quality, customer satisfaction and continuance intention?

For answering these research questions, **Firstly,** factor analysis was used to identify the main contributing factors in measurement of service quality. Among all the factors in main three categories, that is: Interaction Quality, Physical environment Quality and Outcome/Network quality, constructs present in Interaction quality and outcome quality are adequately reflected. Based on the factor analysis result ***customer care/help services*** (interaction quality) and ***Network/VAS performances*** , ***call rate*** (Outcome quality) approached as principal component factor. The other prime factor came up in this research as ***Switching barrier, Brand Image/trust, Customer loyalty*** and ***continuance intention*** which create affect service quality of the mobile telephone service in our country.

Also, in the overall regression analysis, higher regression coefficients (β) was reflected on the following service quality constructs. They are: ***Call rate/charge, Signal availability, call drop frequency, Voice quality, ease of access to customer care/ call center and time taken to resolve problem***. Their detail has already been presented in the analysis and findings chapter. Which means that if this constructs contribution increases, service quality of the respective mobile operators will increase accordingly. All of their association with either customers perceived value or satisfaction or their continuance intention are positive except call drop, meaning, there is a negative relationship exist between call drop and service quality, which is also practically justified .

Among the regression model, Service quality emerged to have more influence on perceived value and customer satisfaction rather than direct impact on customer's continuance intention. The findings showed that customer's perceived value and satisfaction has more prominent influence on customers' continuance intention.

One thing the researcher in this study feels to mention that R2 or adjusted R2 value in multiple regression analysis was not that much high like .7 or .8 above. From many past studies , the researcher has found that, when there is a study happened concerning human behavior prediction or exploratory research those values may not be higher. Also. higher R2 value does not always mean that the true phenomenon has came up in the study. So, based on the originality and the context, the researcher has shown the exact phenomenon what came out as result.

Secondly, Chi square was initially used to test the significance level of the hypotheses that were presented in the conceptual model. All of the hypotheses were accepted at $p<0.05$ significance level.

Finally, which was the unique contributing part in this research that is to identify the link with service quality and net promotion score for the mobile telecom operators in Bangladesh. For that purpose, respondents were asked to rate their score based on their service quality and satisfaction regarding their respective operators. The result already has been discussed in chapter 6. The summary is though according to market share Grameen phone is the largest operator in our country, their NPS is only 0.2%. The second highest NPS stand for ROBI(0.18%) . Banglalink (-0.23%) and Airtel (-0.45%) NPS are negative. Citycell(0.09%) and Teletalk(0.03%) NPS is not that significant. But, apparently, all of these operators are close to each other in terms of their product offerings and competition. If they really want to retain their customers and make more profit from them, there is no alternative but to offer them an excellent service.

This finding is consistent with the previous literature indicating that customers' perceptions of overall service quality are influenced to a large extent by the degree of interpersonal empathetic behavior of the provider (Andaleeb 2001; Bitner 1990; Brady & Cronin 2001; Dagger et al. 2007; Rosenbaum & Massiah 2007). It also indicates that understandability of the user's needs and the ability to provide customized attention are critical to improve service quality in the mobile telecom sectors in Bangladesh .

7.4 Contributions of this research

"Contribution is a relative term in that it also implies that the work is adding to a body of literature or methodological development…" Grover et al. (2009, p. iii)

To the knowledge of the researcher of this study, the main value of this study lies in identifying, for the first time in the mobile telecom service sector in Bangladesh to link service quality with continuation intention of the customers. Also, this study identified that switching behavior is not only linked with customers' perceived value. Even if the customers' perceived value is low, due to some switching cost, like fear of losing contacts with others if they change their contact number, or avoiding the hassle of changing the operators, customer's are continuing their service with their existing operators. Also linking the NPS and service quality is another unique contribution of this research in terms of service quality study in Bangladesh. Practically, the study provides managers with a service quality model linked with customers' satisfaction and continuance intention for conducting integrated analysis and design of service delivery systems. Overall, the study makes a significant contribution to achieving support for the telecom companies and to their companies profitability through identifying crucial factors related to this.

7.4.1 Contribution to Theory:

This study extends service quality research in IS domain by developing a conceptual model, which links service quality , customers' perceived value, satisfaction and their continuance intention in the context of developing country like Bangladesh. This research also identifies the three primary dimensions and nine sub dimensions of service quality (i.e. interaction quality, physical environment quality, and outcome quality. The sub dimension level includes: (Attitude, behavior, expertise, ambient conditions, design, social factors, waiting time, tangibles, valence) which is applicable in the mobile telecom service sector in the context of Bangladesh. Also, identifying the NPS of each respective mobile operators contributes to the understating of their consumers' intention to promote their companies and subsequently to their organization growth. By encompassing the combined explanatory power of each component, the conceptual model presented in this study advances service quality theory in IS research while presenting a resourceful structure.

Specifically, the study contributes in several ways to service quality research in the service systems domain in developing country context. ***Firstly***, the study has defined the domain of three primary service quality constructs, and some relevant sub dimension constructs and their associated measurement instruments (Information collected from the practical field)against the backdrop of service quality research in the mobile telecom sector in Bangladesh.

Secondly, the study has identified a comprehensive, yet precise set of dimensions that help predict the quality of an emerging theoretical artifact (i.e. NPS) and its association with service quality and its outcome constructs (i.e. perceived value, customer satisfaction and loyalty.) ***Thirdly***, the study has explored characteristics and issues that are specific to the mobile telecom service platform, which provides a solution to the existing and difficult service delivery challenges from the perspective of Bangladesh market.

The conceptualization and the measurement of customers' perceptions of service quality have given rise to much controversy in the domain of the service marketing literature. However, the results of this study support the use of a hierarchical and multidimensional approach for conceptualizing and measuring customers' perceptions of service quality, similar to the models developed by Brady and Cronin (2001), and Dabholkar et al. (1996). The result of this study indicates that all the constructs and hypothesis developed in this research conceptual model have accepted because of their significance and good model fit. ***Fourthly***, In particular, the results of this study indicate that both Service Quality and Customer Perceived Value are important determinants of Customer Satisfaction. However, Service Quality is a more important determinant of Customer Satisfaction than Customer Perceived Value. Also, this is highly significant to determine customer's continuance intention which is also a key contributing factor to determine companies profitability in the context of Bangladesh mobile telecom sector.

Although service quality research has proven to be instrumental for the success of technology-mediated service platforms in the high-income electronic markets of the developed world, there are few studies in IS which have designed models to serve developing countries (Walsham et al. 2007). It is worth noting that developing countries represent more than four billion consumers and the concept of designing economically-viable and socially-responsible ICT platforms to serve this majority of the world's population has gained increased attention (London et al. 2009; Prahalad 2004; Prahalad & Hart 2002; Prahalad & Hammond 2002). Thus, the study believes that the proposed theoretical framework makes a significant contribution to knowledge as most of its constructs and their relationships have not been the subject of prior theorizing in this context. Also, this study opens a new horizon in the mobile telecom service quality research in our country which will bring some new perspectives to this field.

7.4.2 Contribution to Practice:

In today's competitive mobile telecommunication market, service is the only weapon which can give the company competitive advantage and bring new customers. This study provides a framework with some underlying constructs for the mobile telecom operators to assess and identify customer's perception of mobile telecom service in the Bangladesh market. From a managerial perspective, this study develops a hierarchical link with service quality and customer's perceived value, satisfaction and their continuance intention. Managers of mobile

communication companies can use the dimensions of service quality identified in this study as a background for formulating their management strategies in this market. For example, given the importance of Expertise to customers‘ perceptions of Interaction Quality, launching a regular training programme is a sound management strategy that will enable employees to enhance their own customer service expertise.

Moreover, the multidimensional and hierarchical framework developed for this study enables mobile communications service providers to identify the most and the least important dimensions underlying customers‘ perceptions of service quality. The findings of this study provide valuable information regarding the complex relationships between Service Quality, Customer Satisfaction, Customer Perceived Value, Perceived Switching Costs, and Customer Loyalty for practitioners who are already operating in, or preparing to enter, the Bangladesh mobile communications market.

The proposed conceptual model used in this study may provide managers with a tool for conducting an integrated analysis and design of service delivery systems. It underscores that only having a good technological platform (e.g., information systems and a good wireless network) is not enough to deliver the desired levels of service quality(Akhter, 2010). Thus, mangers need to understand the impact of those on their loyalty and further action. Understanding and identifying the NPS of their respective operators is also crucial for the manager. They need to understand why their organizations' NPS is low or not performing high enough. These may give a clue for their further development or strategy formulation. These findings provide a useful road map for making interventions in the service delivery systems targeting the improvement of a particular quality dimension at different levels.

The findings of the study support the importance of service quality as a decision-making variable in predicting individual outcome (i.e., satisfaction), economic outcome (i.e., continuance intention). Continuance is the ultimate outcome variable, which is identified as one of the critical challenges to identify and replicate the best service practices around the world (Akhter, 2010). Therefore, the findings on ‘continuance’ and its antecedents will facilitate the productivity and profitability of the mobile telecom companies in the developing country context like Bangladesh.

The findings of the study extend the scope of service systems research for practitioners by modeling the impact of quality-dominant logic on satisfaction, perceived value and intention to continue using through an expanded theory-based framework. As discussed above, the implications are highly relevant to practitioners as they improve the overall understanding of how service quality is linked to critical service outcomes in developing countries. The findings provide critical insights to practitioners on mediating, moderating and contextual variables

which are fundamental to scale and sustain business models in a developing country context (Akhter, 2010)

Overall, the findings on service quality dynamics will help practitioners to improve their strategy linked with service delivery systems in developing countries by facilitating service continuance, which will positively increase their workflow and promoting evidence-based practice to make informed and effective decisions directly targeted to their esteemed customers.

Table 7.1: Summary of Research contributions:

Criteria	***Contributions of this study***
1. Contribution to the knowledge	1. This study contributes in service quality research in IS domain by *developing a hierarchical relationship with continuance intention* in the context of developing country like Bangladesh.
2. Research Theme	2. This research explored a new topic and conceptual model and focused on some *unique and practical parameters* and their *association* in mobile telecommunication service quality research.
3. Coverage of Key Literature	3. Extensive key literature reviews used in chapter 2. Some of these theories and models were rarely used in the service quality research in Bangladesh context.
4. Contribution to Practice	4. This study tried to identify some current issues and challenges linked to mobile telecommunication service quality and their impact on organizations' profitability and consumer loyalty.
5. Large field samples	5. Findings based on comparatively large sample size used in the academic study in terms of Bangladesh perspective. (932 sample for the whole study in the quantitative - positivist framework).

7.5 Observation

Based on the analysis of this study in chapter 6, some observations have been derived. Among these observations some may have some policy related relevance and some of them leads to the future course of research. The observations of this study are presented below:

1. All of the hypotheses proved significant which were presented in the conceptual model in chapter 4 .Which means perceived value and service quality has a significant impact on customer satisfaction and their continuance intention. Particularly, this has been also established that though customers may have low perceived value, due to switching cost/barrier issue, they still continue their mobile operator's service with low satisfaction.

In some cases, this has been a practical issue. Companies are intentionally creating such barriers , so that customers cannot switch to other operators as they can maintain their profit. But, this issue may have a serious impact on customers' loyalty and promoting tendency. And exactly, we have experienced this phenomenon in this research. Though mobile operators have a significant market share, they are suffering from low NPS (net promotion score) from their customers. Now, why the NPS is low, that may be a direction for the practitioners or future research in our mobile telecommunication service quality research.

2. In this research, there were almost 52 variables which were primarily assumed to be important to service quality and its link to customers' perceived value, satisfaction and continuance intention. But, in factor analysis only 8 factors came up as contributing factors. They are: customer care/ help services, network quality, switching barriers, brand image/trust, customers' loyalty, call rate, continuance intention and Value added services.

3. Testing the association of the variables presented in the conceptual model was another objective of this research. For this purpose, multiple regression was used through five equations. The results have presented detailed in chapter six. All of the equations were proved significant at p value <0.05 level. In brief, among all the variables service availability has a higher regression co-efficient on customers perceived value. Voice quality and call rate showed a higher association to determine customer satisfaction. Customer satisfaction directed to switching tendency and continuance intention by showing a higher regression co-efficient. Service worthiness to loyalty, valuable service and customer satisfaction to promoting tendency and customer care efficiency and signal availability emerged as higher regression co-efficient to customers' continuance intention. Meaning, these variables have a contributing strength on dependent variables.

Among all the equations, service quality showed a lower regression co-efficient on net promoting intention of the customer. This findings can leads the practitioners to develop their policy by investigating more deeply on these issues.

4. During data collection and conducting the focus groups for this research, two major issues came up informally, that is call rate and call drop frequency. These are the two vital reasons that the customers mentioned as the prime reasons for their dissatisfaction. But, in the Statistical findings these issues were not that much highlighted. Also, content messages and different advertisement which came through the mobile operators are also creating the annoyance of the customers. Customers' are viewing this as a kind of privacy breach between them and their mobile operators.

5. Govt. regulations and imposing tax on different service of the mobile operators may increase the call rate, which can create a negative impact on this industry. Also, many controversies have been created while the govt. has allocated the spectrums for 3G to different operators .At present, mobile telecommunication is a very lucrative segment to attract revenue for the govt. lack of proper management and allocating spectrums inefficiently can create a disaster to this emerging industry. So, Government should be more conscious to make the future policy and allocating the national resource i.e spectrums to the mobile operators.

These are some general observations that emerged during this research. May be, in future policy makers, practitioners and/or academicians may embrace these issues in their research, policy or strategy.

7.6 Limitations

Despite of numerous hard work, there were some limitations exist, but the researcher of this study believes that within a practical research it is common to have some limitations. The ***first*** limitation of this study is related to the sample drawn for this study. The sample was drawn only from the major divisions of Bangladesh. Despite the fact that Bangladesh mobile phone subscriber is not only division based, rather than it is largely scattered around urban and rural area wise, thus the sample of this study does not fully represent all of the Bangladesh mobile phone users.

The ***second*** limitation is the ability to generalize the findings derived from this study to other industries and countries. The findings of this study are based on the perceptions of Bangladeshi customers of the mobile communications market only. Therefore, the findings may not be able to be generalized for other industries or countries.

The ***third*** limitation is that although this study examined the complex relationships that may exist between Service Quality, Customer Perceived Value, Customer Satisfaction, Corporate Image, Perceived Switching Costs, and Customer Loyalty, there are some potential relationships that may be omitted from the proposed conceptual model. ***Finally***, methodologically, different data analysis technique had been used to derive a conclusion for these type of research. For example, in many of these earlier research which has investigated these type of relationships or

constructs used structural equation model to identify latent variables. But, Structural equation modeling has not been used in this study.

7.7 Directions for future research

Future research can build on this study's interesting findings and add further value through two approaches: research model consolidation and research model extension. Relative suggestions are put forward:

- **Research model consolidation**: The research model could be consolidated through eliminating or dealing with the limitations discussed above to reach a better understanding of perceived service quality, customer satisfaction and continuance intention in the mobile telecommunication sector in Bangladesh. The following could be done:

1. Investigate why price/call rate does not affect that much the relationship between perceived service quality and customer satisfaction in the case of Bangladesh mobile telecommunication industry. Also. why the unwanted communication or content service does not affect the service quality? It would be interesting if these constructs can be added to the conceptual model that has been used in this study.

2. Replicate the research model in other contexts like studying perceived service quality, customer satisfaction and continuance intention in other economic sectors other than mobile telecommunication. Examples could be banking, tourism, insurance, consulting, engineering, etc. This could help find out which dimensions can be generalized in order to come up with a common and simplified model applicable to different sectors in Bangladesh.

3. Furthermore, comparative studies in similar country context like other south-asian countries, or developing country context , could also be beneficial to indicate any similarities and differences.

4. Investigate the possibility of having additional demographic related differences like expanding the samples from the rural areas and compare the results that how it differs from urban perspective.

5. Conduct a qualitative study to go back and explore new dimensions of the model and develop customized questionnaire items, rather than adopting an already existing one like SERVQUAL or SERVPERF. Focus group panel meetings could be organized to brainstorm these dimensions and items from the point of view of both urban and rural consumers perspectives.

6. To overcome the shortcomings of convenience sampling as discussed earlier, simple random sampling or stratified random sampling could be employed. In simple random sampling all population elements are taken into account while all elements have the same probability to

be selected as subjects; therefore, the findings would be highly generalizable (Sekaran, 2000). On the other hand, stratified random sampling is considered to be the most efficient sample design but more time consuming since the population should be first segmented into homogeneous groups and then subjects are selected (Sekaran, 2000).

- **Research model extension:** The research model could be easily broadened by including new ideas or variables thus transcending the research questions at hand. Therefore, several propositions are put forward for that purpose:

1. Uncover other possible supplementary variables that might affect customer satisfaction and continuance intention with the link of service quality in the mobile telecom industry. Moreover, further investigation could include variables that might mediate or moderate, whether by weakening or strengthening the relationships that has been used in the conceptual model.

2. Extending the current model by investigating other consequences of service quality and consequences of customer satisfaction could also add value. For example, this study investigated the effect of those relationships in customers' net promotion intention. So, other effects like loyalty, purchase or repurchase intention, profitability and retention, marketing performance etc. can also be subject matter of further investigation.

3. Studying the impact of perceived service quality on customer dissatisfaction too would help provide further explanation about these phenomena and their relationships. It is said that when expectations exceed actual performance, perceived quality would be evaluated as below satisfactory thus leading to customer dissatisfaction (Parasuraman et al., 1985; Lewis & Mitchell, 1990; Shahin & Janatyan, 2011). Variables that affect satisfaction may not be the same as those leading to dissatisfaction. Therefore, this topic deserves more investigation to clarify the nature of satisfaction/dissatisfaction among mobile telecom customers in Bangladesh.

4. Another important direction is to investigate more the relationship between perceived value, service quality and switching barriers in case of Bangladesh service quality research context. The researcher feels that the amount of research that has been used in this study investigating their relationship is not sufficient. There has been a huge scope for further investigation in this particular area and this findings can bring a new dimension in the service quality research.

5. Methodologically, it would be useful for future research to evaluate hierarchical modeling by comparing the performance between component-based SEM (PLS) and covariance-based SEM under different research conditions.

7.8 Conclusion

As a general conclusion, the researcher believes that this research is rich in terms of literature representation and valuable in terms of the model presented and the findings uncovered. The study fills several research gaps with respect to international studies. Moreover, to the knowledge of the researcher, this study is the first of its kind in Bangladesh till date and specifically in the mobile telecommunication industry. With additional research to consolidate and extend the model, several interesting findings are expected to be uncovered. Such results would definitely help out managers find ways of improving service quality and boosting customer satisfaction thus affecting loyalty, retention, and overall profitability in this sector.

Overall, the findings of the study are highly valuable to managers to capture users' service quality perceptions which have been evidenced as hierarchical, multidimensional and context specific. This knowledge provides an important step on the path to providing conceptual clarity and practical solutions to the service quality challenges of mobile telecom service systems in Bangladesh. The study hopes that this research will serve as a catalyst for action by encouraging both researchers and practitioners in Bangladesh to embrace service quality as a core concept in service systems research.

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Appendix

Appendix 1: Skewness & Kurtosis

	N	Mean		
	Statistic	Statistic	Skewness	Kurtosis
Usership1	932	1.46	.151	-1.981
Usership2	932	2.42	.799	-.332
Usership3	932	2.24	.179	-1.063
Usership4	932	1.69	-.834	-1.307
Usership5	932	2.72	.569	-.558
SP1	932	3.58	-.636	.236
BL1	932	2.97	-2.91	-.887
BL2	932	2.91	-.121	-.952
BL3	932	3.10	-.211	.410
BL4	932	1.63	-.554	-1.730
BL5	932	3.35	-.493	.243
BL6	932	3.16	.020	-.047
BL7	932	2.10	-.206	-2.110
CusCare1	932	3.45	-.015	-.665
CusCare2	932	3.70	-.066	-.155
CusCare3	932	3.33	-.137	-.799
CusCare4	932	3.87	-.040	-.423
CusCare5	932	3.51	.112	-.816
CusCare6	932	4.20	-.168	-.667

NetRel 1	932	3.55	-.425	-.351
NetRel 2	932	3.68	-.710	.160
NetRel 3	932	3.54	-.620	-.059
NetRel 4	932	3.72	.124	-.749
NetRel 5	932	3.78	-.489	.410
VAS1	932	1.57	-.036	-.883
VAS2	932	1.34	.874	-.460
VAS3	932	3.28	-.283	.020
PV1	932	3.58	-.498	.161
PV2	932	3.22	-.074	-.618
BI1	932	3.87	-.555	.467
BI2	932	3.88	.102	-.590
BI3	932	3.77	-.325	.507
BI4	932	4.02	-.086	-.658
BI5	932	3.91	-.130	-.131
SwitCost1	932	3.91	-.734	-.105
SwitCost2	932	4.09	-1.001	1.134
SwitCost3	932	3.63	.002	-.196
CusLoy1	932	3.72	-.479	.238
CusLoy2	932	3.49	-.135	-.328
CusLoy3	932	3.52	-.358	.108
CusLoy4	932	3.52	-.236	.134
CusLoy5	932	3.74	-.300	-.151

NPS	932	6.84	-.653	-.335
SAT1	932	3.49	-.709	.574
SAT2	932	1.68	.309	-.621

Appendix 2: Descriptive Statistics

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
use of more than one SIM	932	1	2	1.46	.499	.151	.080	-1.981	.160
operator's connection that individual uses as main connection	932	1	6	2.42	1.454	.799	.080	-.332	.160
usage (years of use) of mobile connection	918	1	4	2.24	.979	.179	.081	-1.063	.161
usage of any other operator connection as main connection before the current one	913	1	2	1.69	.462	-.834	.081	-1.307	.162
other connections beside the main connection	478	1	6	2.72	1.468	.569	.112	-.558	.223
satisfaction with the time taken to activate or re-activate the mobile connection	920	1	5	3.58	.912	-.636	.081	.236	.161
satisfaction with the accuracy of charges i.e. amount deducted on every usage	827	1	5	2.97	1.146	-.291	.085	-.887	.170
satisfaction with the calling rate offered by the operator	827	1	5	2.91	1.177	-.121	.085	-.952	.170
satisfaction with the accuracy of the bills (POST_PAID)	96	1	5	3.10	.923	-.211	.246	.410	.488
billing related complaints made in last 12 months	95	1	2	1.63	.485	-.554	.247	-1.730	.490
satisfaction with the process of resolution of billing complaints	95	1	5	3.35	.822	-.493	.247	.243	.490

satisfaction with the clarity of bills issued by the service provider in terms of transparency and understanding	95	1	5	3.16	.915	.020	.247	-.047	.490
reasons for dissatisfaction with the clarity of issued bill	21	1	3	2.10	.995	-.206	.501	-2.110	.972
Clarity of instruction on top-up card	931	1	6	3.45	1.414	-.015	.080	-.665	.160
Ease of access to call center/customer care/help line	929	1	6	3.70	1.285	-.066	.080	-.155	.160
Willingness of the frontline employees to help you at touch points/service centers	926	1	6	3.33	1.482	.137	.080	-.799	.161
Response time taken to answer your call by a customer care executive	920	1	6	3.87	1.332	-.040	.081	-.423	.161
Problem solving ability/knowledge of the customer care executives	927	1	6	3.51	1.508	.112	.080	-.816	.160
Time taken by call center/customer care/help line to resolve your complaint	929	1	6	4.20	1.342	-.168	.080	-.667	.160
Availability of signal of your service provider	925	1	6	3.55	1.170	-.425	.080	-.351	.161
Voice quality	926	1	6	3.68	1.041	-.710	.080	.160	.161
Call success rate(Attempt to establish call)	921	1	6	3.54	1.052	-.620	.081	.059	.161
Restoration of network/ signal problem	920	1	6	3.72	1.397	.124	.081	-.749	.161
call drop frequency during conversation	911	1	6	3.78	1.111	-.489	.081	.410	.162
use of value added services like 3G, roaming, ring tone, GPRS, e-mail, voice mail or any other such services	920	1	4	1.57	.508	-.036	.081	-.883	.161

clear satisfaction with the service provider's explicit consent before providing the chargeable value added services	918	1	4	1.34	.482	.874	.081	-.460	.161
satisfaction with the quality of the supplementary/value added services provided	923	1	5	3.28	.938	-.283	.080	.020	.161
the service received from my operator is valuable	921	1	6	3.58	1.090	-.498	.081	-.068	.161
The Service quality received from my operator is worthy for my money , time and efforts	919	1	6	3.22	1.160	-.074	.081	-.618	.161
operator's reputation is high	921	1	6	3.87	1.050	-.555	.081	.467	.161
current mobile operator is very responsible to the social responsibility	912	1	6	3.88	1.325	.102	.081	-.590	.162
The company delivered a good brand image to its customers	921	1	6	3.77	1.114	-.325	.081	.507	.161
The policies and procedures of this company is trustworthy	917	1	6	4.02	1.389	-.086	.081	-.658	.161
The service process provided by this operator is secure	919	1	6	3.91	1.183	-.130	.081	-.131	.161
switching to a new operator causes monetary cost, energy, time and effort	922	1	6	3.91	1.075	-.734	.081	-.105	.161
If I change my phone number, I would be concerned if people dial my previous number but could not reach me	923	1	6	4.09	.915	-1.001	.080	1.134	.161

I am not satisfied by the service quality of my present mobile operator, for the switching cost issue, I will continue my existing mobile operators service	920	1	6	3.63	1.109	.002	.081	-.196	.161
I intend to continue using mobile services from this operator for a long time	921	1	6	3.72	1.000	-.479	.081	.238	.161
Even if another operator's price is lower , I will go on using this provider	922	1	6	3.49	1.198	-.135	.081	-.328	.161
I am willing to say positive things about this operator to other people	925	1	6	3.52	1.085	-.358	.080	.108	.161
I will encourage friends and relatives to use the services offered by this operator	924	1	6	3.52	1.047	-.236	.080	.134	.161
To me, my current operator clearly is able to provide the best service	919	1	6	3.74	1.158	-.300	.081	-.151	.161
how likely are you to recommend this operator (current main connection) to a friend, colleague or relative/close ones	913	0	10	6.84	2.694	-.653	.081	-.335	.162
satisfaction with the overall service quality offered by the current operator	889	1	5	3.49	.865	-.709	.082	.574	.164
reasons for your dissatisfaction with the overall service quality	93	1	3	1.68	.611	.309	.250	-.621	.495

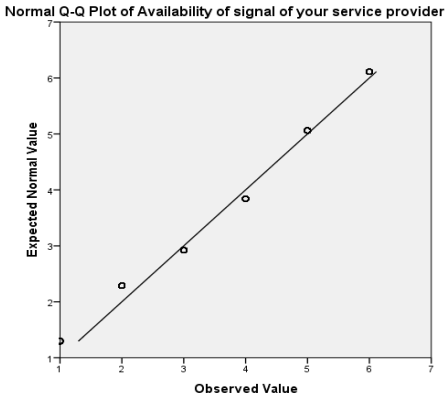
. . . . .

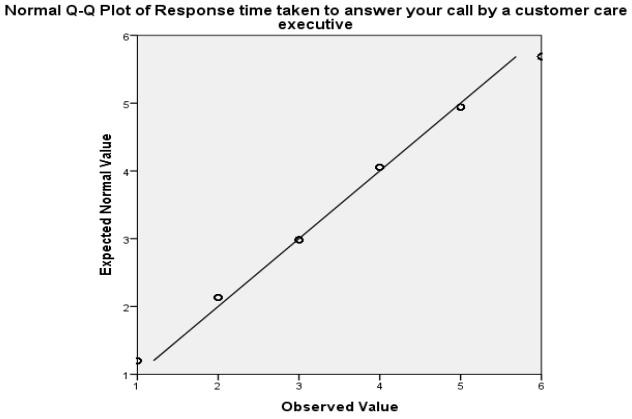
Correlation Matrix:

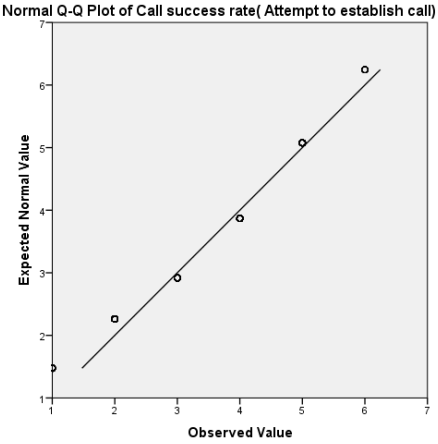
		V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14	V15	V16	V17
Correlation	v1	1.000	.827	.347	.276	.294	.212	.180	.132	.344	.302	.279	.314	.169	.145	.244	.022	-.040
	v2	.827	1.00	.328	.279	.331	.214	.218	.135	.323	.309	.309	.331	.185	.159	.231	.016	-.002
	V3	.347	.328	1.00	.689	.639	.504	.443	.318	.360	.371	.213	.197	.074	.329	.274	.197	-.021
	V4	.276	.279	.689	1.00	.589	.550	.433	.330	.240	.237	.177	.176	.086	.297	.257	.179	-.053
	V5	.294	.331	.639	.589	1.00	.616	.690	.432	.302	.324	.308	.289	.182	.308	.170	.201	.033
	V6	.212	.214	.504	.550	.616	1.00	.575	.514	.254	.293	.286	.239	.185	.315	.169	.178	.035
	V7	.180	.218	.443	.433	.690	.575	1.00	.584	.226	.306	.332	.308	.218	.316	.124	.124	.022
	V8	.132	.135	.318	.330	.432	.514	.584	1.00	.153	.218	.238	.240	.215	.338	.184	.093	-.024
	V9	.344	.323	.360	.240	.302	.254	.226	.153	1.00	.671	.550	.452	.322	.300	.362	.101	-.037
	V10	.302	.309	.371	.237	.324	.293	.306	.218	.671	1.00	.620	.368	.330	.327	.338	.145	-.039
	V11	.279	.309	.213	.177	.308	.286	.332	.238	.550	.620	1.00	.457	.394	.252	.188	.044	.027
	V12	.314	.331	.197	.176	.289	.239	.308	.240	.452	.368	.457	1.00	.379	.106	.234	.083	-.030
	V13	.169	.185	.074	.086	.182	.185	.218	.215	.322	.330	.394	.379	1.00	.099	.176	-.038	-.132
	V14	.145	.159	.329	.297	.308	.315	.316	.338	.300	.327	.252	.106	.099	1.00	.342	.112	.007
	V15	.244	.231	.274	.257	.170	.169	.124	.184	.362	.338	.188	.234	.176	.342	1.00	.064	-.107
	V16	.022	.016	.197	.179	.201	.178	.124	.093	.101	.145	.044	.083	-.038	.112	.064	1.00	.227
	V17	-.040	-.002	-.021	-.053	.033	.035	.022	-.024	-.037	-.039	.027	-.030	-.132	.007	-.107	.227	1.00
	V18	.193	.209	.261	.263	.308	.302	.311	.287	.362	.416	.404	.152	.253	.584	.411	.010	-.055
	V19	.367	.395	.171	.091	.258	.184	.249	.157	.312	.346	.352	.332	.325	.142	.208	-.033	.002
	V20	.252	.255	.304	.332	.336	.331	.347	.366	.267	.333	.340	.271	.237	.529	.338	.099	-.016
	V21	.227	.238	.154	.151	.209	.191	.189	.286	.233	.251	.288	.223	.241	.340	.255	-.012	-.093
	V22	.189	.180	.242	.181	.155	.181	.077	.105	.405	.373	.260	.222	.105	.287	.488	.148	-.100
	V23	.130	.122	.180	.193	.142	.183	.103	.086	.288	.347	.278	.121	.087	.306	.367	.076	-.052
	V24	.169	.170	.089	.126	.188	.181	.249	.242	.127	.186	.223	.120	.153	.280	.178	-.006	.123
	V25	.192	.233	.227	.230	.320	.282	.351	.328	.240	.259	.244	.184	.211	.355	.189	.055	.116
	V26	.267	.269	.227	.169	.213	.227	.243	.202	.389	.351	.300	.188	.184	.350	.281	.024	.002
	V27	.315	.356	.128	.023	.219	.134	.236	.211	.293	.337	.356	.298	.278	.190	.246	.003	.106
	V28	.242	.269	.144	.143	.199	.206	.274	.264	.326	.301	.329	.205	.199	.322	.253	.036	-.006
	V29	.151	.176	.218	.275	.180	.211	.192	.181	.334	.289	.206	.140	.122	.337	.366	.037	-.002
	V30	.196	.213	.168	.173	.214	.214	.326	.302	.352	.304	.313	.272	.239	.327	.248	.032	-.020

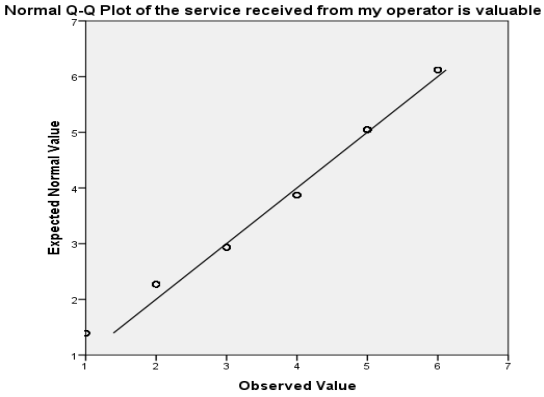
		V18	V19	V20	V21	V22	V23	V24	V25	V26	V27	V28	V29	V30
Correlation	v1	.193	.367	.252	.227	.189	.130	.169	.192	.267	.315	.242	.151	.196
	v2	.209	.395	.255	.238	.180	.122	.170	.233	.269	.356	.269	.176	.213
	V3	.261	.171	.304	.154	.242	.180	.089	.227	.227	.128	.144	.218	.168
	V4	.263	.091	.332	.151	.181	.193	.126	.230	.169	.023	.143	.275	.173
	V5	.308	.258	.336	.209	.155	.142	.188	.320	.213	.219	.199	.180	.214
	V6	.302	.184	.331	.191	.181	.183	.181	.282	.227	.134	.206	.211	.214
	V7	.311	.249	.347	.189	.077	.103	.249	.351	.243	.236	.274	.192	.326
	V8	.287	.157	.366	.286	.105	.086	.242	.328	.202	.211	.264	.181	.302
	V9	.362	.312	.267	.233	.405	.288	.127	.240	.389	.293	.326	.334	.352
	V10	.416	.346	.333	.251	.373	.347	.186	.259	.351	.337	.301	.289	.304
	V11	.404	.352	.340	.288	.260	.278	.223	.244	.300	.356	.329	.206	.313
	V12	.152	.332	.271	.223	.222	.121	.120	.184	.188	.298	.205	.140	.272
	V13	.253	.325	.237	.241	.105	.087	.153	.211	.184	.278	.199	.122	.239
	V14	.584	.142	.529	.340	.287	.306	.280	.355	.350	.190	.322	.337	.327
	V15	.411	.208	.338	.255	.488	.367	.178	.189	.281	.246	.253	.366	.248
	V16	.010	-.033	.099	-.012	.148	.076	-.006	.055	.024	.003	.036	.037	.032
	V17	-.055	.002	-.016	-.093	-.100	-.052	.123	.116	.002	.106	-.006	-.002	-.020
	V18	1.00	.230	.532	.466	.345	.353	.344	.357	.355	.294	.405	.335	.408
	V19	.230	1.00	.293	.246	.167	.136	.209	.298	.275	.447	.297	.212	.279
	V20	.532	.293	1.00	.493	.285	.289	.348	.333	.263	.312	.320	.249	.360
	V21	.466	.246	.493	1.00	.257	.275	.318	.359	.259	.337	.285	.268	.313
	V22	.345	.167	.285	.257	1.00	.580	.225	.197	.317	.269	.269	.356	.206
	V23	.353	.136	.289	.275	.580	1.00	.365	.254	.326	.236	.290	.429	.228
	V24	.344	.209	.348	.318	.225	.365	1.00	.548	.305	.286	.325	.380	.343
	V25	.357	.298	.333	.359	.197	.254	.548	1.00	.378	.382	.375	.506	.392
	V26	.355	.275	.263	.259	.317	.326	.305	.378	1.00	.352	.664	.442	.498
	V27	.294	.447	.312	.337	.269	.236	.286	.382	.352	1.00	.361	.219	.302
	V28	.405	.297	.320	.285	.269	.290	.325	.375	.664	.361	1.00	.346	.631
	V29	.335	.212	.249	.268	.356	.429	.380	.506	.442	.219	.346	1.00	.350
	V30	.408	.279	.360	.313	.206	.228	.343	.392	.498	.302	.631	.350	1.00

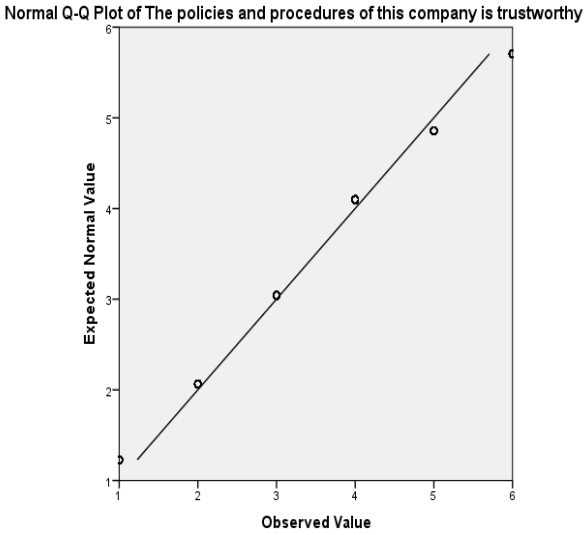
Appendix 3: Data Normality

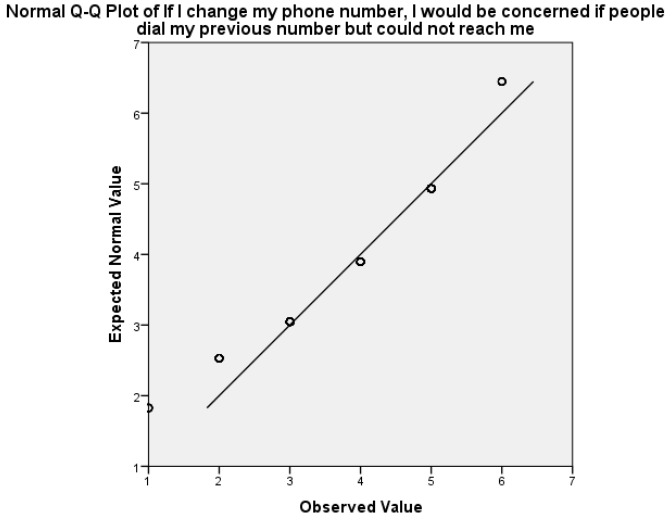




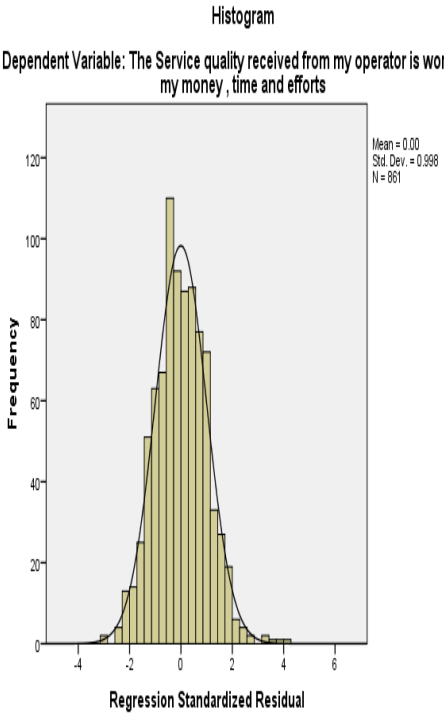


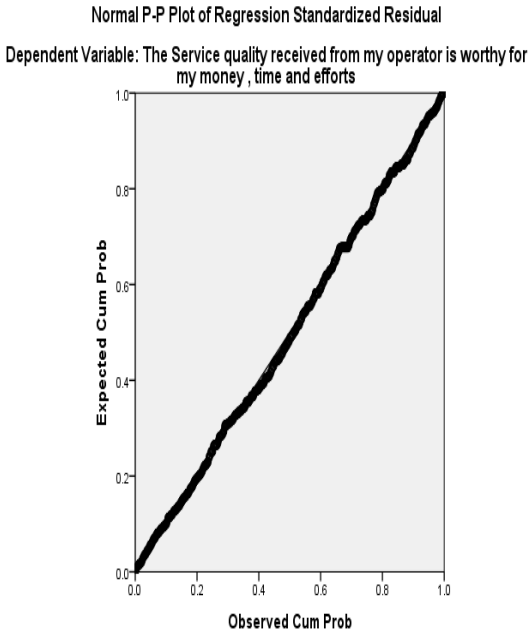


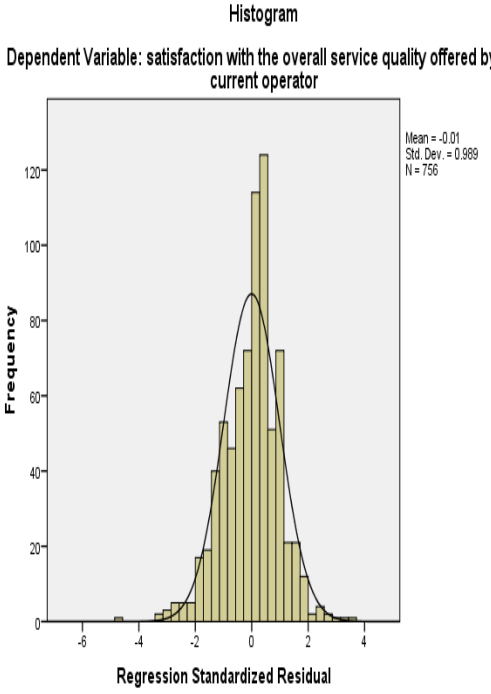


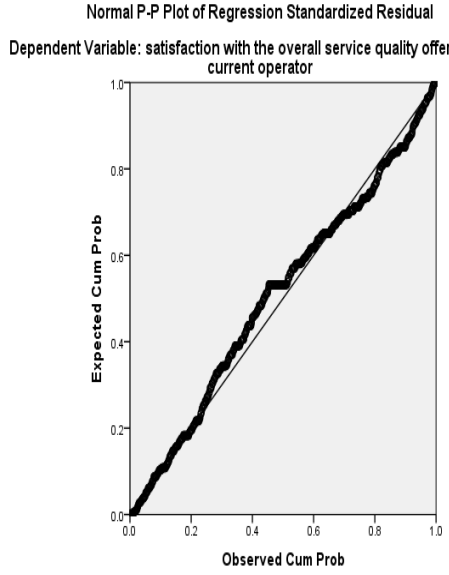


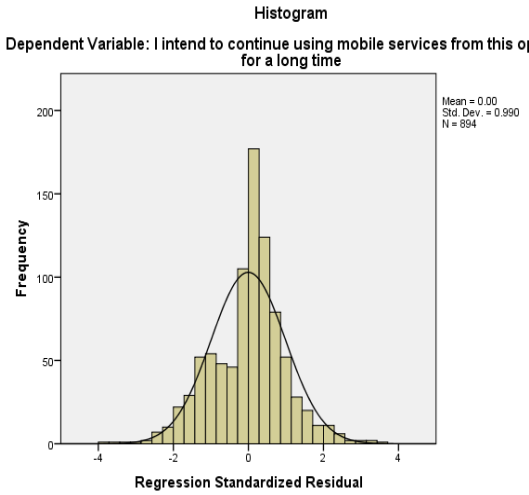
Appendix 4: Residual Plot

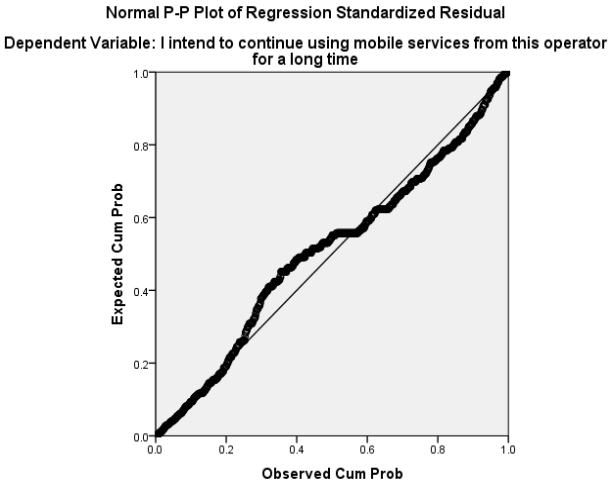


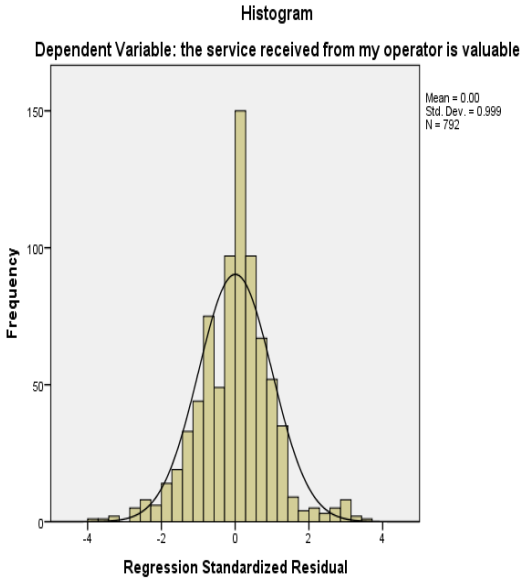







Histogram
Dependent Variable: I intend to continue using mobile services from this operator for a long time
Mean = 0.00
Std. Dev. = 0.990
N = 894
Frequency
Regression Standardized Residual


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: I intend to continue using mobile services from this operator for a long time
Expected Cum Prob
Observed Cum Prob


Histogram
Dependent Variable: the service received from my operator is valuable
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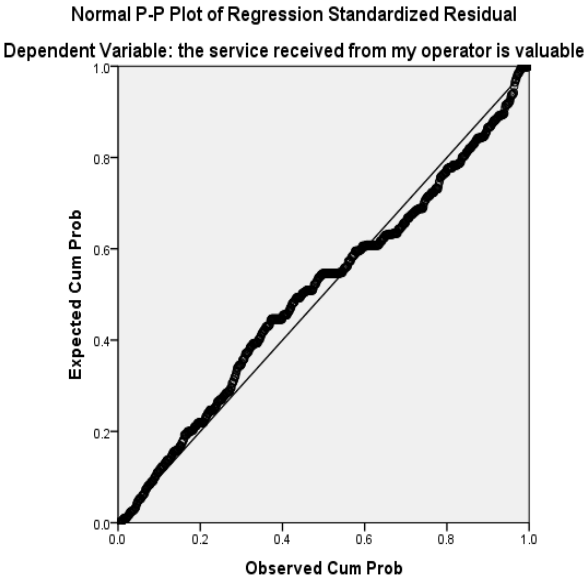
Std. Dev. = 0.999
N = 792
Frequency
Regression Standardized Residual


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: the service received from my operator is valuable
Expected Cum Prob
Observed Cum Prob

Appendix 5: Questionnaires

Dear Participants,

I am conducting a survey regarding service quality Bangladesh Mobile telecommunication markets. In the following questionnaire we would like to know your experiences and expectations related to the service quality issue that you are using presently. This survey is a part of my Ph.D thesis and your kind help is crucial for my successful completion of this research project. Your response will be anonymous; data will be combined and analyzed as a whole. Please attempt to answer all the questions and circle one appropriate answer that best suits your perspectives for each statement.

Your participants in the study will be greatly appreciated. Thank you very much for your time and assistance.

Section A: Usership

1. Do you use more than one SIM? a) yes b) no

2. Which operator's connection do you use as your main connection?
a) Grameen phone b) Banglalink c)Robi d) Airtel e) Citycell f) Teletalk

3. For how long you are using this mobile connection?
a) More than 6 years b) 3-6 years c) 1-3years d) less than 1 year

4. What is the type of service of your main connection? a) Post-paid b) Pre-paid

5. Did you use any other operator connection as your main connection before this one?
(If yes, please mention which company) _____

6.1 Why did you switch your previous connection to the new one?
a) Service related issue(network/billing/complaint/help service etc) b) Other issues_____

7. What other connections do you use beside your main connection?
a) Grameen phone b) Banglalink c)Robi d) Airtel e) Citycell f) Teletalk

Section B

Service Provision

1. How much time was taken to get the working connection (activation) after you applied and completed all the formalities?
a) more than 7 days b) 4-7 days c) 2-3 days d) 1day

2. How satisfied are you with the time taken to activate or re-activate the mobile connection?
1 very dissatisfied 2 dissatisfied 3 Neutral 4 satisfied 5 very satisfied

Billing Related - prepaid customer (Post-paid customers need not feel it)

3. How satisfied are you with the accuracy of charges i.e. amount deducted on every usage?

1 very dissatisfied 2 dissatisfied 3 Neutral 4 satisfied 5 very satisfied

4. How satisfied are you by the calling rate offered by your operator?

1 very dissatisfied 2 dissatisfied 3 Neutral 4 satisfied 5 very satisfied

5. If you are dissatisfied with the accuracy of charges, then please specify the reason(s) for your dissatisfaction(multi-coding possible)

1.Charges not as per tariff plan subscribed
2.Tariff plan changed without information
3. charged for value added services not requested
4. Charged for calls/services not made/used
5. Others_____

Billing Related - postpaid customer (Prepaid customers need not feel it)

6. How satisfied are you with the timely delivery of bills?

1 very dissatisfied 2 dissatisfied 3 Neutral 4 satisfied 5 very satisfied

7. How satisfied you are with the accuracy of the bills?

1 very dissatisfied 2 dissatisfied 3 Neutral 4 satisfied 5 very satisfied

8. If you are dissatisfied with the accuracy of charges, then please specify the reason(s) for your dissatisfaction(multi-coding possible)

1.Charges not as per tariff plan subscribed
2.Tariff plan changed without information
3. charged for value added services not requested
4. Charged for calls/services not made/used
5. Others_____

9. Have you made any billing related complaints in last 12 months?

a) yes b) no

10. How satisfied are you with the process of resolution of billing complaints?

1 very dissatisfied 2 dissatisfied 3 Neutral 4 satisfied 5 very satisfied

11. How satisfied are you with the clarity of bills issued by your service provider in terms of transparency and understanding?

1 very dissatisfied 2 dissatisfied 3 Neutral 4 satisfied 5 very satisfied

12. If you are not satisfied with the issued bill then please specify the reasons for your dissatisfaction (multi coding is possible)

1.Difficult to read the bill
2. difficult to understand the langage
3. calculations not clear
4. Item wise bill not given
5. Others_____

Customer care/Help services

13. The following attributes are related to customer care/help services of your mobile phone operator. Kindly mention your satisfaction level regarding the following attributes.

	Very dissatisfied	Dissatisfied	Neutral	Satisfied	Very satisfied	Don't know
Clarity of instruction on top-up card (if you are a pre-paid user)	1	2	3	4	5	6
Ease of access to call center/customer care/help line	1	2	3	4	5	6
Willingness of the frontline employees to help you at touch points/service centers	1	2	3	4	5	6
Response time taken to answer your call by a customer care executive	1	2	3	4	5	6
Problem solving ability/knowledge of the customer care executives	1	2	3	4	5	6
Time taken by call center/customer care/help line to resolve your complaint	1	2	3	4	5	6

Network performance. Reliability and Availability

14. The following attributes are related to network performance (reliability and availability) of your mobile phone operator. Kindly mention your satisfaction level regarding the following attributes.

	Very dissatisfied	Dissatisfied	Neutral	Satisfied	Very satisfied	Don't know
Availability of signal of your service provider	1	2	3	4	5	6
Voice quality	1	2	3	4	5	6
Call success rate(Attempt to establish call)	1	2	3	4	5	6
Restoration of network/ signal problem	1	2	3	4	5	6

	Very frequently	Frequently	Neutral	Occasionally	Never	Don't know
How often does your call drop during conversation?	1	2	3	4	5	6

Supplementary services/ Value added services

15. Beside using SMS, Do you use value added services like 3G, roaming, ring tone, GPRS, e-mail, voice mail or any other such services? a) Yes b) No

16. Are you clearly satisfied with the service provider to have your explicit consent before providing the chargeable value added services? a) Yes b) No

17. How satisfied are you with the quality of the supplementary/value added services provided?

1 very dissatisfied 2 dissatisfied 3 Neutral 4 satisfied 5 very satisfied

Perceived Value

18. Kindly mention your opinion regarding the following statements that indicate your perceived value of your mobile usership

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Don't know
Overall, the service I receive from my operator is valuable	1	2	3	4	5	6
The Service quality I receive from my operator is worthy for my money , time and efforts	1	2	3	4	5	6

Brand Image/trust

19. Kindly mention your opinion regarding the following statements that indicate your Brand image/trust

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Don't know
I consider that this operator's reputation is high	1	2	3	4	5	6
My mobile operator is very responsible to the social responsibility	1	2	3	4	5	6
The company delivered a good brand image to its customers	1	2	3	4	5	6
The policies and procedures of this company is trustworthy	1	2	3	4	5	6
The service process provided by this operator is secure	1	2	3	4	5	6

Switching cost

20. Kindly mention your opinion regarding the following statements on switching cost

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Don't know
I feel that switching to a new operator causes monetary cost, energy, time and effort	1	2	3	4	5	6
If I change my phone number, I would be concerned if people dial my previous number but could not reach me	1	2	3	4	5	6
I feel though I am not satisfied by the service quality of my present mobile operator, for the switching cost issue, I will continue my existing mobile operators service	1	2	3	4	5	6

Customer Loyalty

21. Kindly mention your opinion regarding the following statements that indicate your customer loyalty.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Don't know
I intend to continue using mobile services from this operator for a long time	1	2	3	4	5	6
Even if another operator's price is lower , I will go on using this provider	1	2	3	4	5	6
I am willing to say positive things about this operator to other people	1	2	3	4	5	6
I will encourage friends and relatives to use the services offered by this operator	1	2	3	4	5	6
To me, my current operator clearly is able to provide the best service	1	2	3	4	5	6

22. Considering your complete experience with your current operator, on a scale of 0-10, how likely are you to recommend this operator (current main connection) to a friend, colleague or relative/close ones?

0	1	2	3	4	5	6	7	8	9	10

(Give your response on the basis that, '0' stands for 'very unlikely' and '10' stands for 'very likely')

Satisfaction

23. How much are you satisfied with the overall service quality offered by this operator?

1 very dissatisfied 2 dissatisfied 3 Neutral 4 satisfied 5 very satisfied

24. If you are not satisfied with the overall service quality for your mobile operator, please specify the reasons for your dissatisfaction .

1._____
2._____
3._____

25. I am satisfied with the performance of the frontline/call center employee of this operator.

1 very dissatisfied 2 dissatisfied 3 Neutral 4 satisfied 5 very satisfied

Section C: Demographic Information

Gender (□□□□□/□□□□□)	Male (□□□□□)	1
	Female (□□□□□)	2
Division (□□□□□)	Dhaka (□□□□)	1
	Chittagong (□□□□□□□□□)	2
	Khulna (□□□□□)	3
	Rajshahi (□□□□□□□)	4
	Barisal (□□□□□□)	5
	Rangpur (□□□□□)	6
	Sylhet (□□□□□)	7
Age range (Years) (□□□ □□□□ (□□□□))	18-29 (□□-□□)	1
	30-39 (□□-□□)	2
	40-49 (□□-□□)	3
	50-60 (□□-□□)	4
Educational Qualification (□□□□□□□□ □□□□□□□)	Below SSC (□□ □□ □□ □□ □□□□)	1
	SSC (□□. □□. □□)	2
	HSC (□□□. □□. □□)	3
	Graduate (□□□□□□)	4
	Post-graduate (□□□□□□□□□□□)	5
Profession (□□□□)	Job holder (□□□□□□□□)	1
	Business Person (□□□□□□□□)	2
	Retired person (□□□□□□□□□□□)	3
	Home maker (□□□□□□)	4
	Student (□□□□□)	5
	Others (mention) □□□□□□□□ (□□□□□□ □□□□) ……	6

Thanks for your kind assistance! It is greatly appreciated!