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Research Article

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A Logistic Regression Model Of Customer Satisfaction Of E-Banking Service Quality In Bangladesh

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ABSTRACT

Appraisal of customer satisfaction varies from one study to another. Most of studies focused on evaluating factors influencing customer satisfaction and quality of services. In this paper logistic regression is used to find out the relationship between customer satisfaction and e-banking service quality for five conventional schedules Banks in Bangladesh, such as one is owned by government, two conventional private commercial banks (one of them is Islamic), one is specialized government bank and another one is a foreign bank. There are three independent(Information Quality, Service Quality, System Quality)and one dependent (Customer Satisfaction)variables have been considered for this research.Data were collected randomly from seven divisions of Bangladesh. A sample size of 350 customers who are using at least an e-banking service or product from aforesaid commercial banks in Bangladesh was resulted for research work. This research is only based on primary data. This data were collected from the field survey through questionnaire. Findings showed that the three independent variables are positively related with customer satisfaction. The paper recommends that the Banks should improve their information quality about e-banking services all over Bangladesh. Besides these, they need to improve customer service by practicing new techniques for customer handling. Data were analyzed using Statistical Package for Social Sciences (SPSS) version 22. Analysis was done using logistic regression to determine importance of the factors that influence customer satisfaction. A chi-square test was used to indicate how well the logistic regression model fits the data.

KEYWORDS: ***Logistic, Information Quality (IQ), Service Quality (SERQ) and System Quality (SYSQ) and Customer Satisfaction (CSAT) on e-banking service quality (EBSQ).***

Introduction:

As competition in the market, it has been understood that customer satisfaction plays major role to keep companies in the line of business. Satisfaction is the feeling of someone who described feeling happy or disappointed that the result of comparing the perceived performance of a product with the expected product performance [Kotler, P. (2003). Rizan, M. (2010)]. There have been different methods and statistical techniques are used to measure customer satisfaction.

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Customer evaluations on service are highly dynamic, complex, and subjective in nature [Yoo, D. K. and Park, J. A. (2007)]. Some of the techniques used include weighted SERVQUAL adopted by Degirmenci et al. 2012 SERVQUAL, regression analysis used by Shahin and Janatyan (2011)., Rasch model used by Nicolini and Salini 2006, Pearson correlation used by Oyewole et al. 2007. Furthermore descriptive analysis has been adapted to measure customer satisfaction.

Literature Review:

E-Bankingis the up-to-the-minute service carriage network forbanking services in Bangladesh. Banks are using electronic networks to connect and perform business with both domestic and international customers. There are various definitions of e-banking as followings: e-banking is the access of the customers to bank services by secure intermediaries without any physical presence Daniela R, Dospinescu O. (2004). By definition e-banking varies amongst researcher partially because e-banking refers to several types of services through which bank customers can request information and carry out most retail banking services via computer, television or mobile phone. It as an electronic connection between bank and customer in order to prepare, manage and control financial transactions. E-banking can also be distinct as a variety of following platforms: PC Banking, Internet banking, Tele-banking and mobile banking etc. It includes the methods that enable bank's customers, individuals or businesses, to access accounts, transact or obtain information on financial products and services through a network, including the Internet or mobile phone. These terms refer to a number of ways in which customers can access their banks without having to be physical presence at the bank branch. E-banking may be understood as a term that covers all these ways of banking business electronically.

E-banking:

E-banking is an expansion over conventional banking system because it has shortened the cost of transaction processing and thereby improving the payment efficiency and also improving the banker-customer relationship. The relationship between e-banking and service quality can be studied with the level of customer satisfaction and banker satisfaction. It plays an essential role in providing satisfaction not only to the customers but also bankers. Banks should discover innovative ways of making electronic services more accessible and by allowing the customer to verify the accuracy of the e-banking transactions. For many customers e-banking means 24 hours access to cash through ATM or direct deposit of pay cheques into savings account but electronic banking involves different types of transactions. E-banking also means transferring of funds electronically with the use of computer and other electronic modes. It allows customers to automate cash receipt payment.

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Difference between Traditional branch Banking and e-banking

In order to investigate the changes from traditional branch banking to e-banking in terms of technological knowledge, we analyze the key differences in the IT infrastructure, transaction and service dimension. Due to the emergence of internet, the manual record maintaining was shifted from manual to mainframe, to personal computer, to client /server for the IT infrastructure. Traditional banking requires the interaction with physical facilities, processes and payments (Suresh, 2008).The customers are also required to carry out transactions with having a physical presence in a particular geographical location. On the other hand, e-banking is a way of on-line transaction via internet. It constructs an alternative channel by which customers can easily make a transaction anywhere-anytime and reduce the needs for financial intermediaries (Cheung and Liao, 2003).Further, there is a wide deviation between traditional branch banking and e-banking. In traditional branch banking, the services are more comfortable, risk is less, and trust can be easily maintained because of individual contact. However, in e-banking, the services are more convenient, efficient and based on market extension. With relation to market scope, traditional banking is related to physical transaction, customers centered and focused to the particular customers in a geographic boundary. On the other hand, e-banking is not restricted to a particular area but the customers are connected with internet connection with wide customers' base and having the active participants. From the cost point of view, traditional banking is having restricted networking, high transaction and operating cost. On the other hand, e-banking is having high technological cost, management cost and high creational cost. From the profit aspect, as the risk is low so profits are also low. In e-banking profits are very high due to the variety of services offered but at the same time advertisement cost, commissions, service charges are very high. However, transaction cost and labour charges are quite low. From the value point of view, the main stakeholders are consumers and financial institutions in traditional banking, whereas internet service providers, content portals, online stores, and retail outlets are all the part of e-banking.E-banking has unique distinctiveness that may enlarge an institution's overall danger profile and the level of risk associated with usual financial services, particularly, strategic, operational, legal, and reputation risks.

These unique e-banking characteristics include:

1. Speed of technological change.
2. Changing customer expectations.
3. Increased visibility of publicly accessible networks.
4. Less face-to-face interaction with financial institutions customers.
5. Need to integrate e-banking with the institution's legacy computer systems.
6. Dependence on third party for necessary expertise and

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7. Proliferation of threats and vulnerabilities in publicly accessible networks.

Different product and services used currently by the banks in Bangladesh:

Bangladesh is still lagging behind to avail the opportunity of e-banking. However, banking sector as a whole has been introducing e-banking system which plays complementary role in spreading e-business and e-finance. Internet has opened a new horizon of e-business, creating immense opportunities for marketing products as well as managing banking organizations internationally. Gradually, wireless Internet system has been creating a new model and electronic fund transfer can have a suitable formation. It is the financial world where technology has the widely implemented area for meeting the financial needs by saving customers access time internationally. Consumers can use a web browser to access their accounts, balance checkbooks, transfer and even pay bills online. Realizing from the universal experience that today's banking means Phone Banking, Automated Teller machine, Tele Banking and Smart Cards. In the context of Bangladesh, there are several special services already implemented in different banks, they are as below:

Core Banking is a general term used to describe the services provided by a group of networked bank branches. Bank customers may access their funds and other simple transactions from any of the member branch offices.

Internet Banking provides the facility of bank through internet and it gives us freedom of choosing our banking hour by allowing us greater control on our finance. This service is secure and fast.

Mobile Banking allows customer of a financial institution to conduct a number of financial transaction through mobile devices such as a Mobile Phone or Personal Digital Assistant.

Short Message Service (SMS) is the formal name for text messaging. It allows customers to make simple transactions to their bank accounts by sending and receiving text messages. It can be expressed that it is a alert and information system.

Electronic Funds Transfer (EFT) is a system of transferring money from one bank account to another without any direct paper money transaction.

Any branch banking is the service where an account is accessible from any branch of a particular bank. In Bangladesh the term is widely popularized as online banking.

Point of Sale (POS) service is an innovative electronic money transferring system that allows the customers of banks to pay for their purchases through their ATM and credit card at any POS enabled retailer.

Banking KIOSK offers customers the flexibility to conduct their banking transactions via the KIOSK machine. The customer must have a Debit Card and a Personal identification Number (PIN). When one

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inserts the debit Card into the Kiosk, he/she will be prompted to enter the PIN. He/she can then begin using KIOSK Banking.

The Society for Worldwide Interbank Financial Telecommunication (SWIFT) operates a worldwide financial messaging network which exchanges messages between banks and other financial institutions.

Magnetic Ink Character Recognition (MICR) is character recognition technology adopted mainly by the banking industry to facilitate the processing of cheque.

Open online Letter of Credit means that for opening letter of credit the customers need not to go to the bank physically. They can open the letter of credit with the help of online banking.

Tele banking: It is another type of voice promoted electronic banking system in which a touch-tone phone is used. Here the services are:

1. Cheque account balance
2. Receiving balance and transaction reporting
3. Initial multi-currency payment orders.
4. Communication with bank employee through E-Mail

ATM (Automated Teller Machine) is a self-service device for providing teller services to bank's clients. This can be defended as tellers designed for unattended customer use. This is also a form of Electrical Fund Transfer (EFT).

The main services are:

- ✓ Cash dispensing
- ✓ Deposit and withdrawal of cash
- ✓ Deposits of cheque
- ✓ Transfer of funds between accounts
- ✓ Bill payment
- ✓ Full statement producing
- ✓ Balance enquires
- ✓ Request for cheque book

Credit cards: There are various types of cards being used here in Bangladesh. The main categories are: Credit Card, VISA & Master Card Credit Cards.

Debit Card: Debit cards are linked directly to the bank account of its holder. The older of debit card can use it to buy goods or withdraw cash and the amount is taken from the bank account right away.

Retail Automated Clearing House Service: The Automated Clearing House (ACH) is an electronic network for financial transactions. ACH processes large volumes of both credit and debit transactions which are originated in batches. ACH credit transfers include direct-deposit payroll payments and payments to contractors and vendors. ACH debit transfers include consumer payments on insurance premiums, mortgages loans and other kinds of bills. Businesses are also increasingly using ACH to collect from customer online, rather than accepting credit or debit cards.

Corporate Automated Clearing House: The Automated Clearing House (ACH) is an electronic network for financial transactions. ACH processes large volumes of both credit and debit transactions

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which are originated in batches. Other retail and fiduciary products and services may include balance inquiry, Funds transfer, downloading transaction information, Bill presentment and payment, Loan Application, Investment activity and other value-added services.

In Bangladesh different banks are offering electronic banking services in different ways, some are offering ATM (Automatic Teller Machine) services, some are tele-banking and some are electronic fund transfer, debit card, credit card etc.

Economic Rationale of E-Banking:

Modernization in Technology has distorted the traditional retail banking business model by making it possible for banks to break their traditional value creation chain so as to allow the production and distribution of financial services to be separated into different businesses. Thus, for example, primarily Internet banks distribute insurance and securities as well as banking products, but not all the products they distribute are produced by their group. However, the main economic argument for diffusion of adopting the Internet as a delivery channel is based on the expected reduction in overhead expenses made possible by reducing and ultimately eliminating physical branches and their associated costs (e.g. staff, marketing and rent). This specifically applies to and relevant in the Spanish banking system, which is one of the most "over branched" in Europe. As stated by De Young, and Delgado et al. the Internet delivery channel may generate scale economies in excess of those available to traditional distribution channels. The unit costs of Internet banking fall more rapidly than those of traditional banks as output increases as a result of balance sheet growth. In this context, De Young, Lang and Nolle refer to the Internet banking as a "process innovation that functions mainly as a substitute for physical branches for delivering banking services". In the case of the Spanish banks, there is some undependable evidence that shows that the Internet distribution channel has lower unit transaction costs than the two other distribution channels (branch and telephone) for a given type of transaction (money transfer, mortgage loan, brokerage or demand deposits).

The applications of e-banking:

Banking has never been more important to our society than it is today. The way Bill Gates (2008) announced that « banking is essential, banks are not ». This quotation means that the traditional bank branch is going to vanish in order to be surrogated by e-banking which continues to attract new users. The banking industry believes that by adopting new technology, the banks will be able to improve customer service level and tie their customers closer to the bank. The application of e-banking has been proven as an effective way to reduce the costs of operation for the financial institutions. For instance, e-banking services will allow banks to reduce expenditures on physical structures. It is believed that the e-banking will help banks to cut costs, increase revenue, and become more convenient for customers. Another important benefit from e-banking is a more

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effective information collection and management. Finally, the development of e-banking service has encouraged the adoption of a decentralized approach to give banks more needed flexibility to distribute Internet access to a much larger number of employees and potential customers.

E-banking benefits:

Benefits of e-banking serve several benefits to any societies. From the banks point of view, the first benefit for the banks offering e-banking services is better labeling and better responsiveness to the market. Those banks that would offer such services would be perceived as leaders in technology implementation. Consequently, they would enjoy a better brand image. The other benefits are possible to measure in monetary terms. The main aim of every business is to maximize profits for its possessors and banks are not out of that aim but at the time of maximizing profits banks perform some social responsibilities through charitable and other projects. Automated e-banking services offer a perfect opportunity for maximizing profits.

The main benefit from the bank customers' point of view is weighty saving of time by the automation of banking services processing and introduction of an easy maintenance tools for managing customer's money. The main advantages of e-banking for corporate customers are reduction of costs in using the e-banking services, increasing comfort and timesaving, transactions can be made anytime anywhere without requiring the physical interaction with the bank, quick and continuous access to information, they can check on multiple accounts at the click of a button, e-banking facilities speed up cash cycle and increases competence of business processes as huge variety of fund and cash management instruments are available on Internet sites of banks, private customers seek slightly different kind of benefits from e-banking. Aladwani (2001) has found that providing faster, easier and more reliable services to customers were amongst the top drivers of e-banking development.

However, these can be highlighted that these are most effective benefits from e-banking services: the cost of availing and using the various banking products and services is reduced. All the banking transactions can be performed from the comfort of the home or office or from the place a customer wants to. The response of the medium is very fast; therefore customers can actually wait till the last minute before concluding a fund transfer.

Economic benefits, Lower operational costs of banks, Automated process, Accelerated credit decisions, Lowered minimum loan size to be profitable, Potentially lower margins, Lower cost of entry, Expanded financing reach, Increased transparency, Expand reach through self-service,Lower transaction cost, Make some corporate services economically feasible for society, Make anytime access to accounts and loan information possible.From society perspective E-banking business makes access to finance from banks attractive. Society is being benefited from the development of e-finance and gradually stepped out of the informal sector.

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Benefits for society: Ease of use, Lower costs of financing, Convenience, Time savings, Operational efficiency. E-banking is optimal integration of all the activities of a bank via using modern IT that all the required services can be given to the customers. It enables customers to browse principal bank products and services seven days a week through their personal computers Polatoglu VN, Ekin S (2001).

Risks in E-banking:

E-banking improves a bank's performance and competitiveness so that existing customers can benefit from greater degree of convenience in effecting transactions. However, the banks are facing with different levels of risks and expectations arising from electronic banking as compared to traditional banking services. Various kinds of risks are involved with e-banking. Some of these risks are discussed below:

Operational Risk:

Due to the starter of e-banking technology, operational risks are on the rise and should be maintained in a proper way. The bank needs to manage these risks in the areas of security, data confidentiality, data system integrity, system availability and outsourcing. These risks are closely linked to reputation risks and legal risks for banks as if the security breaches than it will have damaging effects on the reputation of bank which could have the legal consequences also. Threats can come from inside and outside the system. It includes "hijacking", "sniffing" or "spoofing" to retrieve and use confidential consumer information, add customer assets and subtract customer liabilities or interrupt operations. Human resource management must ensure that personnel involved in maintaining and operating the websites and system are adequately trained in security practices.

Reputational Risk:

Reputational risk is the risk related to negative opinion of the customers that result in critical loss of funding of the customers. Reputational risk may arise due to action taken by the bank itself or in response to action of the third parties. This risk mainly arises when the system is not able to perform as expected. This risk may also arise from targeted attacks on banks.

Legal Risk:

Legal risks also arise in e-banking. Banks engaging in electronic banking and electronic money activities can face legal risks with respect to customer disclosures and privacy protection. Customers who have not been adequately informed about their rights and obligations may bring suit against a bank. Failure to provide adequate privacy protection may also subject a bank to regulatory sanctions in some countries. Banks choosing to enhance customer service by linking their internet sites to other sites can also face legal risks. A hacker may use the linked site to defraud a bank customer; and the bank could face litigation from the customer.

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Financial Risks:

It is the constant and terrible fear of transactions errors causing a potential monetary loss suffered by customers who perform online transactions. So, it is clear that e-banking is actually lacking the assurance provided in traditional banking (Lee, 2009) and this is due to the fact that online banking is considered as an innovation which is incompatible with consumers' habits (Kuisma et al., 2007).

Performance Risk:

This is the risk caused due to malfunctioning of online banking websites. Customers are often afraid that a disconnection from the Internet will occur while performing electronic transactions that can lead to "huge" unexpected losses (Kuisma et al., 2007). This idea was confirmed by Sathye (1999) who argued that Internet access is a crucial variable on which the adoption of online banking depends.

Privacy Risk:

It refers to the potential loss due to fraud or a hacker compromising the security of an online bank user (Lee, 2009). This risk is accentuated since the emergence of phishers whose hobby consists of attempting to collect personal information, such as usernames, passwords and credit card details. They not only lead to users' monetary loss, but also violate users' privacy (Entrust, 2008).

Time Risk:

It is the time loss; the delay in receiving the payment or the difficulty of navigation (Lee, 2009). This can be due to a disorganized website, to slow-downloadable pages and long time needed to be a PC-literate.

Credit Risk:

Credit risk is not increased due to loan originated through e-banking channel. But sometimes bank may not be able to evaluate the credit worthiness of the customer due to remote banking procedures. However, online loan origination and approval tend to make risk management of lending tasks more difficult and challenging. The banks should always verify the customers' identity for online credit applications and also the monitoring and controlling the growth, pricing, underwriting standards and ongoing credit quality of loans originated through e-banking channels.

Other Risks:

The use of electronic delivery channels for banking activities also has implications for other traditional banking risks such as strategic and business risk, credit risk, liquidity risk, market risk and foreign exchange risk.

To build a new customer base, the banks have to set up their prices very competitively. Investment in technology involves significant startup costs. Adequate opinion of experts is needed. Supervisors must ensure that management of banks are aware of these risks involved in e-banking and carefully access their strategic

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options so that the added uncertainties may be compensated by additional returns

E-Banking Services qualities, there are three basic types of e-banking service qualities such as: system quality, information quality and service quality.

Information quality:

Itrefers to the quality of the information or the output that the system produces. The operational potential of information quality (Palmer JW, 2002) depends on factors like accuracy, precision, currency, timeliness, reliability, completeness, conciseness, relevance, and the preferred format.

Service quality:

In information system it isa very popular measure for total quality of service is developed by Pitt et al.Pitt FL, Watson RT, Kavan CB (1995). The dimensions of the instrument include tangibles: reliability, responsiveness, assurance, and empathy. Delone et al. (DeLone WH, Mclean ER 2003) originate that the importance of the relationship by the user is mainly increasing in the Information Technology departments, hence, they highlighted on developing a construct measurement on service quality in order to update their model.

System quality:

Delone et al. 2003 branded system quality as anticipated features of the information system itself. They incorporate four instruments: convenience, flexibility, integration and response time Bailey JE, Pearson SW (1983). The other measures include: realization of user expectations response time Srinivasan A (1985) reliability, response time, ease of use, ease of learning perceived usefulness of IS resource utilization, investment utilization IS sophistication, use of new technology flexibility of system, system reliability, system accessibility ease of navigation, privacy, security, and customization , ease of learning, sophistication, system features, data accuracy, efficiency.

Customer Satisfaction:

Over the years, multiple definitions of satisfaction have been used in the marketing discipline. The wide transformation in defining the construct of satisfaction is best reconciled in their definition of satisfaction as “a summary affective response of varying intensity with a time-specific point of determination and limited duration directed toward focal points of product acquisition and/consumption.” We conceptualize satisfaction as a customer’s overall evaluation of a product or service in terms of whether that product or service has met their needs and expectances. Customer satisfaction is a key agent in formation of customer’s desires for future purchase Mittal V, Kamakura WA (2001). Furthermore, the satisfied customers will probably talk to others about their good experience. This fact, especially in the Middle Eastern cultures, where the social life has been shaped in a way that social communication with other people enhances the society, is more significant Jamal A, Naser K (2002). Now we

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consider the construct of satisfaction in the online context.

Research Questions:

A. What are the e-banking service quality factors to satisfy the users in e-banking in Bangladesh ?

Research Objective:

1. To analyze the customer satisfaction level in e-banking in Bangladesh
2. To find out the interrelationships between e-banking service quality, user satisfaction and net benefit

Hypothesis:

H1: e-banking service quality is positively associated with customer satisfaction

Conceptual Framework:

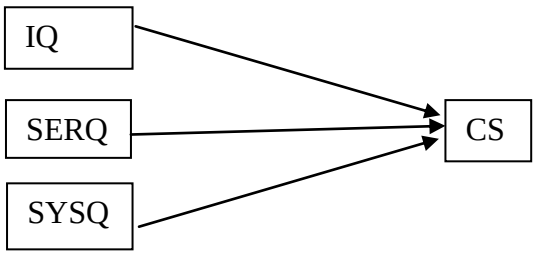

Figure 1: Conceptual Framework

Logistic Regression:

This regression is extension of linear regression used to predict dichotomous dependent variable. It is applied when the relationship between dependent variable and independent variables (s) is nonlinear. Linearity is considered to be in logit. Logistic regression predict likelihood that *Y*=1and not 0 given certain values of *X*. This implies that if *X* and *Y* are linear related, probability of *Y*=1 increase as value of X increases. If this is a case, interest is to predict probabilities rather than the scores of dependent variables (Fall, 2011). Assumptions for logistic regression differ to that of linear regression. In order to have prediction model like that of linear regression there is a need of manipulating the logistic regression model which is commonly called logit (natural logarithm of an odds ratio).

Research Methodology:

Data collection & Sample plan:

Random Sampling Technique is used for this study. A 350 sample size was taken. Finally, 350 questionnaires were correctly completed by and received from different customers of different banks. The customers were selected by random sampling from seven divisional cities in Bangladesh. All data collection procedures were designed to ensure the anonymity. Respondents typically held purposive sample. For survey, few questionnaires were designed to collect data. Questionnaires were assembled to know about the relationship between e-banking service quality (i.e. system quality, information quality and service quality) and customer satisfaction of that aforesaid Banks of Bangladesh.

Questionnaire design:

The respondents responded to questions under each variable on five Likert Scale with “Strongly Agree” dictating the highest level of satisfaction, “Strongly Disagree” as the highest level of

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dissatisfaction. A few demographic questionnaires were asked for more interpretation of respondents.

Model:

The paper used logistic regression technique to develop customer satisfaction model basing from the fact that both dependent and independent variables are categorical.

Data Analysis:

The study used primary data which were collected in the field through questionnaire. Data were analyzed using Statistical Package for Social Sciences (SPSS) version 22. Analysis was done using logistic regression to determine importance of the factors that influence customer satisfaction. A chi-square test was used to indicate how well the logistic regression model fits the data. Thereafter, logistic regression coefficients were estimated using the following likelihood ration model;

$$\text{Logit}(Y) = \alpha+\beta_1X_1+\beta_2X_2+\beta_3X_3$$

$$= \alpha + \sum_{i=1}^{3} \beta iXi$$

Where, Y = Customer Satisfaction (CSAT), X_1= Information Quality (IQ), X_2= Service Quality (SERQ) and X_3=System Quality (SYSQ)

These three altogether can be expressed by e-banking service quality (EBSQ).

Validity and Reliability:

The reliability of the measures was assessed using the inter-item consistency measure of Cronbach's Alpha (Table 1a and 1b). The alpha for all Independent Variable (IV) and Dependent Variable (DV) ranged from .667to .774 and exceed the minimum acceptable value of 0.7(Nunnally, 1978). Hence no item was deleted.

Table 1 (a):Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.770	.790	4

Source: SPSS result from field work

Table 1 (b): Cronbach's Alpha value

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
IQ	10.8192	4.523	.538	.733
SERQ	10.9370	4.075	.665	.667
SYSQ	10.7645	4.626	.645	.695
CSAT	11.3818	3.663	.516	.774

Source: SPSS result from field work

Test of Hypothesis:

At first, this section explains the general sample description and descriptive statistics of each study constructs with the graphical presentation. Then, a hypothesis test has been conducted to find out the relationships between each of the variables of this study. Finally, this section concludes with the summary of findings related to the hypotheses

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concerning service quality, information quality, system quality and customer satisfaction and the summary of few questions. Based on the 350 sample bank customers, the percentages of male and female respondents are 71.4% and 28.6% respectively, which show the customers of the Bank. In the whole sample, 41.7% of respondents fell in the age range of 20-30, 38.9% fell in the range of 31-40, 14.9% fell in the range of 41- 50 and 4.6% fell in above 50. In terms of qualification, the respondents are SSC (5.4%), HSC (27.1%) Graduate (30.3%), Post Graduate (32.6%) and others (4.0%). 60.9% of respondents are married, 39.1% are single.38% of respondents are service holders, 26.3% are students, 18.9% are engaged with business, 8.3% are professional, 7.7% are housewife and 3% are engaged in other professions**.** The users of e-banking service are 98.6% and most of them are service holder's percentage of which is 38% of 350 customers of selected five banks mentioned earlier

Descriptive Statistics:

High Standard Deviation means that the data are wide spread, which means that customers' satisfaction on e-banking service quality is above satisfactory level Table1.c shows the customers' satisfaction on e-banking service quality with a mean value of 3.86 on a 5 point Likert scale which is above satisfactory level indication.

Table 1(c) : Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
IQ	350	1.00	5.00	3.8150	.79411
SERQ	350	1.00	5.00	3.6971	.82519
SYSQ	350	1.00	8.13	3.8696	.67955
CSAT	350	1.00	5.00	3.2524	1.08172
Valid N (listwise)	350				

Source: SPSS result from field work

Correlation:

Correlation is significant when the value is less than 0.05. In this study, the service quality is correlated with customer satisfaction means at the value of 0.000, information quality is correlated with customer satisfaction at the value of 0.000 and system quality is correlated with customer satisfaction at the value of 0.000. These are significant results.

Table 1(d) : Correlations[b]

		IQ	SQ	SYSQ	CS
IQ	Pearson Correlation	1	.563**	.540**	.289**
	Sig. (2-tailed)		.000	.000	.000
	N	350	350	350	350
SERQ	Pearson Correlation	.563**	1	.507**	.509**
	Sig. (2-tailed)	.000		.000	.000
	N	350	350	350	350
SYSQ	Pearson Correlation	.540**	.507**	1	.498**
	Sig. (2-tailed)	.000	.000		.000
	N	350	350	350	350
CSAT	Pearson Correlation	.289**	.509**	.498**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	350	350	350	350

**. Correlation is significant at the 0.01 level (2-tailed).

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Listwise N=350, Source: SPSS result from field work

Logistic Regression Model:

Out of 350 respondents about 350 were involved for this data survey. This is 100% of targeted sample size. Sample size used to run logistic analysis is satisfactory. Pampel (2000) and Long (1997) recommended sample size for logistic regression analysis not to be less than 100 otherwise the result will be misleading. A minimum of 50 cases per independent variable is recommended (Wright, 1995). In all cases sample size used fulfill the requirement.

Table-2: Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	83.030	3	.000
	Block	83.030	3	.000
	Model	83.030	3	.000

Three variables (IQ, SERQ, SYSQ) have been added to the model. By adding these variables, -2log likelihood (deviance) has reduced by 83.030 on 3 degree of freedom which implies that there is not much variations of customer satisfaction. Looking *p* value of step, block and model it can be seen that these items are significant (< 0.05). This concludes that the additions of the independent variables to the model are statistically significant. This shows that the independent variables explain variations in satisfaction.

From table 3 Cox & Snell R Square and Nagelkerke R Square indicate that the model which includes the three independents variables explains between 21.1% and 28.3 % of the variation in satisfaction.

Table 3:Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	397.591[a]	.211	.283

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

From Table 4, it can be seen that all independent variables are significant (sig = < 0.05).

Table 4: Variables in the equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	IQ	.392	.373	1.102	1	.294	1.480
	SERQ	1.815	.322	31.870	1	.000	6.142
	SYSQ	1.905	.590	10.436	1	.001	6.718
	Constant	-3.233	.608	28.291	1	.000	.039

a. Variable(s) entered on step 1: IQ, SERQ, SYSQ

The Exp (B) column presents odds ratio and indicates that excellent on time system quality (SYSQ) is 6.718 times more likely to make customer satisfied than being dissatisfied. Service quality (SERQ) is 6.142 times more likely to make customer satisfied than being dissatisfied, information quality (IQ) is 1.480 times more likely to make customer satisfied than being dissatisfied.

The table above shows that the estimated model is

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now:

$$\text{Logit } (Y) = \alpha+\beta_1X_1+\beta_2X_2+\beta_3X_3 =$$
$$-3.233+.392X_1+1.815X_2+1.905X_3$$

The model shows that the odd ratios are greater than 1. Hence all variable have positive relationship on customer satisfaction.

Conclusion:

The results of this study provide there is positive relation between customer satisfaction and e-banking service quality of Banks. Even though the results indicate that hypothesis tested gave significant result and it is clear that entire directional hypothesis is true and gave positive result. Furthermore in Bangladesh all kinds of banks need to improve their e-banking service quality more and more. The supply of bank in Bangladesh already been exceeds entire demand of Bank. As such, to survive in the banking industry all the banks have to take new innovative ideas to satisfy their existing customer and hunt for new customer otherwise they will lose their customer and it will decline their profit .Furthermore, the consequence of declining customer satisfaction means dissatisfaction will occur. Thus, there is no other option is open to make their customer satisfied.

Limitation and Future Research Recommendation:

While collecting data from different customer from different location it was really tough to understanding people what is e-banking services and product. Especially other than Dhaka city people are not that much well known about this system of banking. But online banking is well known to all over the country. As such as we get result from this study that information quality about e-banking services in Bangladesh is very poor. People, they have not enough time to reply our question, female does maintain a bank account with the help of her husband , even they never use ATM(Auto Teller Machine) booth or Debit Card in a POS(Point of Sale). Future researchers can concentrate on this issue for further work on it, because still in Bangladesh we are in very early stage of e-banking services. It can be applied not only to banking sector but also any kind of service sector in Bangladesh. Because of our population is high no one bothered about service quality of their institution (Private or Public). However, we have to take some steps to improve customer services to satisfy any kind of customer. Security issue can be most important part of e-banking service quality. Recently from Dhaka city customers have lost their money from ATM and it does prove that there is not enough strong security maintained by the Bank authority.

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