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Impact of Electronic Banking on Service Quality

Manjit Singh* and Robin Kaushal**

* *Department of Commerce, Punjabi University, Patiala*

** *Sri Aurobindo College of Commerce and Management, Ludhiana*

Abstract

An increasingly innovative and aggressive financial services environment as well as deregulation has created more competition and variety of products and services. In fact, these forces of change have made banks to move towards customer-oriented strategies. Customer satisfaction is considered as a prerequisite for customer retention, loyalty, convenience which ultimately helps in realizing the goals like profitability, market share, growth, return on investment, productivity, etc. Informational technology in the form of e-banking plays a significant role in providing better services to customers at lower cost. The present paper endeavours to study the impact of e-banking on the service quality of the customers. To evaluate this impact, SERVQUAL model based dimensions have been used. The results of the study explained that e-banking has provided sophisticated, convenient, cost-effective, suitable, round-the-clock, informative and quick services to customers which are not only required for the customer satisfaction but is a one step forward for the growth of banking sector and the economy as a whole.

INTRODUCTION

Quality of service has become the ultimate factor which differentiates banks and determines whether or not they can survive. The management also recognized the definite needs to adapt itself to a changing environment and provided employees with vision for service quality to bring the banks closer to the customers. In the developing economies, customer seems to keep the "technological factors" of services as the yardstick in differentiating good and bad services and the human factor – (the employees) seem to play a lesser role in

discriminating the quality of service for banks. Banking is no longer regarded as a business dealing with money transaction alone, but also seen as a business related to information on financial transaction. Informational technology in the form of e-banking plays a significant role in providing better customer at lower cost. Several innovative IT based services such as automated teller machine (ATM) , internet banking, smart cards, credit cards, mobile banking, phone banking, and anywhere-anytime banking have provided number of convenient services to the customers. The banks which are providing these services extensively to their customers are more reputed.

E-banking has an edge over traditional banking system because it has reduced the cost of transaction processing, improved the payment efficiency, financial services and improved the bank-customer relationship. The relationship between e-banking and service quality can be studied with the level of satisfaction. As the customer satisfaction is the function of customer expectation level and service quality level provided by the organization, e-banking plays a pivotal role in giving satisfaction to the customers because it fills the gap between the expected and perceived service quality. So, in order to fill this gap, banks should find ways of making electronic services more accessible and by allowing the customer to verify the accuracy of the e-banking transactions.

LITERATURE SURVEY

The researchers have explored and probed the implication perspective of e-banking worldwide and empirical work has been done at the national and international level by various scholars. Raopun (2005) compared the overall service quality of internet banking for the banking industry of Thailand with the help of eight dimensional quality model given by David A. Garvin, namely, performance, features, reliability, conformance, durability, serviceability, aesthetics and perceived quality. The results of the study indicated that reliability, security system and information accuracy were the most important perspectives of the service quality. Dannenberg and Kellner (1998) observed that banks could move one step further by entering into a strategic alliance with internet service provider and as such the bank of tomorrow stands to be feasible with today's technology by providing e-banking services to the customers and a step towards the improvement of service quality. Talwar (1999) examined the IT Revolution in banking sector, which had not only provided improved service to the customer, but also reduced the operational cost. The study evaluated that the computerization of banks, introduction of Real Time Gross Settlement System, setting up Infinet, Electronic Payment Products (such as Electronic Clearing

Service) had ensured better resource management, systematic efficiency and substantially reduced inter branch reconciliation entries. Joseph et al. ' (1999) evaluated the impact of electronic banking on the service delivery by the banks to its customers. Six factor model was used to adequately represent the data and the factors were convenience, accuracy, efficiency, queue management, accessibility and customization. Zeithaml (2002) emphasised on service delivery through electronic channels. The objective of the study was to discuss the definition, conceptualization and measurement of electronic service quality (E-SQ), which was divided into two scales, E-SQ core scale and recovery scale. Four dimensions, namely, efficiency, reliability, efficiency fulfilment and privacy form the core E-SQ scale that could be used to measure customer perception of service quality.

The above review indicates that measuring of impact of e-banking has attracted much attention from researchers, at the international level but there has not been any systematic and comprehensive analysis of the impact of e-banking on the service quality in the Indian banking industry. So, this paper attempts to fill this research gap and evaluates the impact of e-banking on service quality of Indian banking sector.

NEED, OBJECTIVES AND RESEARCH METHODOLGY

With the development of information and communication technology, the world has become a global village and it has brought a revolution in the banking industry. The banks appear to be on fast track for ICT based products and services. Bank customers are becoming very demanding and it is the extensive use of technology that enables banks to satisfy adequately the requirement of customers. E-banking is one of the emerging trends in the Indian banking and playing a unique role in strengthening the banking sector and improving service quality. The banking sector in India has introduced e-banking in a phased manner. Foreign banks are the pioneers in e-banking, private banks introduced it in a big way and public sector banks are in the process of transformation from traditional banking to e-banking. The present paper primarily aims to study the impact of electronic banking on service quality and to identify the important factors for the customers to choose electronic banking for their satisfaction. Two null hypotheses have been framed :

- For the customer satisfaction, all factors are equally important.
- There is no correlation amongst the different factors to judge the customer satisfaction.

Sampling and Data Analysis

The data was collected from the customers of the banks under study through a structured questionnaire to evaluate the services of electronic banking. The customers of four public sector banks, namely, State Bank of India, Bank of Baroda, Punjab National Bank, and Canara Bank; and three private sector banks, namely, ICICI, HDFC, and AXIS Bank were selected and the rationale for selection of these banks for the study was on the basis of their asset base structure. Stratified random sampling technique was used and a sample of 400 respondents was chosen. The data collected through the questionnaire was analyzed by using factor analysis. The 43 service quality variables were analyzed. The variables with factor loadings of 0.40 were considered and other items have been excluded. To check the reliability of the data, KMO, Bartlett's test of Sphericity and Cronbach Alpha were used.

In the statistics we assume that we are extracting factors of Eigen value 1 or more have specified to the computer package while doing factor analysis. The objective is to reduce the variables to a fewer number of factors by retaining only those factors with an Eigen value of 1 or more (in other words, factor must explain at least as much of the variance if not more than a single original variable (Nargundkar, 2002).

Measuring the Reliability of Data

Variables	Kaiser-Meyer-Olkin Measure (KMO)	Bartlett's Test of Sphericity (Approx.Chi-square)	D.f.	Significance Level
Access	0.507	179.659	6	0.000
Communication	0.520	171.384	21	0.000
Competence	0.663	206.790	6	0.000
Credibility	0.591	205.889	10	0.000
Reliability	0.581	74.399	3	0.000
Responsiveness	0.666	275.346	6	0.000
Security	0.666	154.181	6	0.000
Tangibility	0.742	332.709	15	0.000
Understanding	0.797	211.037	15	0.000

In order to know the various factors considered important for the customers, two tests were conducted under the factor analysis to judge the reliability of data, i.e., Kaiser-Meyer-Olkin measure of sampling adequacy and

Bartlett test of sphericity. The results so obtained were subjected to both these tests. The value of KMO statistics in all the factors is >0.5. Hence, all the factors are not considered equally important for measuring the service quality of e-banking. Therefore, null hypothesis is rejected. Bartlett's test of sphericity shows the value of Chi-square which is significant at 0.000 levels in all the dimensions of service quality. These two tests show that the data is fit for conducting the factor analysis.

RESULTS AND DISCUSSION

For the measurement of impact of e-banking on service quality, SERVQUAL model developed by Parasuraman et al. (1985) has been used. The model fills the gap between what the customer expects by way of service quality and what he is actually getting. Service quality is presented as a multidimensional construct and in the original formulation, Parasuraman et al. identified ten components of service quality and each dimension has further four-five dimensions. A brief description of these dimensions is explained as follows :

Responsiveness concerns the willingness or readiness of employees to provide service. It involves timeliness of service. **Reliability** involves consistency of performance and dependability. It also means that the firm performs the service first time and honours its promises. **Competence** means possession of the required skills and knowledge to perform the service. **Access** involves approachability and ease of contact. **Courtesy** involves politeness, respect, consideration and friendliness of contact personnel (including receptionists, telephone operators). **Communication** means keeping customers informed in language they can understand and listening to them. It may mean that the company has to adjust its language for different consumers-increasing the level of sophistication with a well educated customer. **Credibility** involves trustworthiness, believability, and honesty. It involves having the customer's best interests at heart contributing to credibility. **Security** is the freedom from danger, risk or doubt. **Understanding** knowing the customer involves making an effort to understand the customer's needs. **Tangibles** include the physical evidence of the service.

The questionnaire for measuring the impact of service quality was designed on the basis of SERVQUAL dimensions and the prior studies on the service quality. Likert scale was rated from 1 to 5 with referring 1 to strongly disagree and 5 to strongly agree. For the present study, 43 service quality variables were analyzed to determine whether there exists underlying dimension of service quality. Principal

Component Analysis Varimax Rotation Method was employed for extracting the factors. All the variables with their factor loadings and percentage of variance explained by each factor are given in the following tables.

Principal Component Factor Analysis with Varimax Rotation, Percentage of Variance Explained and Factor Loadings

Factor 1

Access

S.No.	Variable	Factor Loading
1.	E-banking service is accessible via Internet banking, mobile banking, EFT, ECS, ATM.	0.467
2.	Online purchase of goods and services including online payment is easier.	0.676
3.	It provides convenient location of service facility (location of ATM, POS terminals)	0.794
4.	It reduces the waiting time to receive the service.	0.659
	Cronbach Alpha	0.556
	Eigen value	1.740
	Percentage of variance(sum of square loadings)	43.491

Factor 2

Communication

S. No.	Variable	Factor Loading	Eigen Value
1.	E-banking explains the service itself.	0.496	1.57
2.	It explains the cost of service being used.	0.676	1.34
3.	It assures the customer that problem will be handled.	0.633	1.22
4.	It explains the trade off between service and cost.	0.519	
5.	E-banking provides up to date information.	0.520	
6.	It also provides sophisticated information for well educated customers.	0.698	
7.	E-banking provides effective medium of promotion of various schemes.	0.695	
	Eigen values	1.57, 1.34 1.22	
	Cronbach Alpha	0.780	
	Percentage of variance (sum of square loadings)	59.077	

Rotated Component Matrix

	Factor 1	Factor 2	Factor 3
Explanation	0.205	0.463	0.49
Cost	-0.381	0.727	-0.025
Handling	0.314	0.731	-0.008
Tradeoff	0.658	0.262	-0.135
Update	-0.041	-0.137	0.707
Sophisticated	0.818	-0.137	0.096
Effectiveness	-0.043	0.097	0.764

Factor 3

Competences

S.No.	Variable	Factor Loading
1.	Transfer of fund is easier through E-banking.	0.418
2.	E-banking provides more punctuality, transparency and accountability.	0.745
3.	Transfer of funds is faster as compared to manual banking system.	0.776
4.	It is trusted by young generation.	0.750
	Cronbach Alpha	0.614
	Eigen value	1.896
	Percentage of variance (sum of square loadings)	47.393

Factor 4

Credibility

S.No.	Variable	Factor Loading
1.	E-banking increases the reputation of the banks.	0.713
2.	It increases the believability, honesty and trustworthiness of the customers in banks.	0.699
3.	It ensures the ability to fulfil the requirement.	0.701
4.	Degree of reliability involved in interaction with customer is more in e-banking.	0.471
5.	It provides unlimited network to the banks to approach customers.	0.346
	Cronbach Alpha	0.787
	Eigen value	1.684, 1.254
	Percentage of variance (sum of square loadings)	58.759

Rotated Component Matrix

	Factor 1	Factor 2
Reputation	0.772	-0.343
trustworthy	0.823	0.147
Ability	-0.151	0.828
Reliability	0.582	0.364
Network	0.205	0.552

Factor 5
Reliability

S.No.	Variable	Factor Loading
1.	It provides accuracy in billing.	0.776
2.	It helps in keeping records correctly.	0.722
3	It performs the service at designated time.	0.615
	Cronbach Alpha	0.699
	Eigen value	1.502
	Percentage of variance (sum of square loadings)	50.061

Factor 6
Responsiveness

S.No.	Variable	Factor Loading
1.	E-banking is very necessary for the development of new economy of India.	0.714
2.	It improves the quality of customer service.	0.724
3.	Response of service through e-banking is very prompt and quick.	0.798
4.	Availability of service is faster in e-banking as compared to manual banking.	0.617
	Cronbach Alpha	0.679
	Eigen value	2.051
	Percentage of variance (sum of square loadings)	51.281

Factor 7
Security

S.No.	Variable	Factor Loading
1.	E-banking ensures physical safety of the transaction.	0.582
2.	Password facility provides confidentiality to transaction.	0.752
3.	It also increases the financial security.	0.687
4.	Privacy can be easily maintained.	0.660
	Cronbach Alpha	0.691
	Eigen value	1.811
	Percentage of variance (sum of square loadings)	45.271

Factor 8
Tangibility

S.No.	Variable	Factor Loading
1.	Banks use advanced Computers/IT to serve clients.	0.648
2.	E-banking provides advanced way of delivering the services.	0.749
3.	Physical representation of service through plastic card, credit and debit card is easy.	0.467
4.	E-banking provides 24 hours, 365 days a year service to customers.	0.706
5.	It helps in reducing the no. of queues in the bank branches.	0.555
6.	E-banking provides more physical facilities to the customers.	0.572
	Cronbach Alpha	0.678
	Eigen value	2.335
	Percentage of variance (sum of square loadings)	38.915

Factor 9
Understanding

S.No.	Variable	Factor Loading
1.	It provides individualized attention to the customers.	0.454
2.	It provides necessary information to the customers.	0.478
3.	Website of the bank is designed according to the need of the customer.	0.502
4.	It ensures to provide necessary information to the customer.	0.515
5.	E-banking learns the specific requirement of the customer.	0.372
6.	It helps in better customer relationship, attracting and retaining them	0.730
	Cronbach Alpha	0.808
	Eigen value	1.995, 1.057
	Percentage of variance (sum of square loadings)	50.862

Rotated Component Matrix

	Factor 1	Factor 2
Attention	0.664	-0.115
Information	0.609	0.327
Need	0.693	-0.149
Assure	0.718	-0.009
Requirement	0.411	-0.451
Relations	0.062	0.852

Nine factors have been extracted with the help of different dimensions of service quality. The percentage of variance explained by the factors individually varies from 38.915 to 58.579 and the communalities vary from 0.460 to 0.778. All the factors have been given appropriate names on the basis of various variables present in each case. The structure of these nine factors is discussed below.

ACCESS

Different dimensions of 'Access' under e-banking were studied and four factors have been loaded. The factor loadings of all the statements were calculated and it has been found that the loading of all the statements is greater than 0.4, thus, all the statements are accepted. The Eigen value and Cronbach alpha for this factor are 1.740 and 0.556 respectively. The Eigen value of the factor was greater

than one and indicates that it fits well with the data from all the respondents on all the statements. The analysis shows that Eigen value explains 43.49 per cent of the variance from all the respondents and there is only one factor extracted having the factor loading closer to 1.This shows that customers do not agree that e-banking is easily accessible through mobile, ATM, internet banking, EFT, and ECS. Convenience is having high factor loading which is 0.79 and as such this factor is extracted and retained. It implies that e-banking provides convenient location of service by installing the onsite and offsite ATMs and point of sale terminals.

COMMUNICATION

The communication factor consisted of seven variables. The factor loadings of all the statements were calculated and it was found that the loadings of all the statements were greater than 0.4, and thus, all were accepted. The values of Cronbach alpha and Eigen value so obtained suggest a good consistency of the data. The analysis shows that the Eigen value represents 59 per cent of the variance of data. In the three variables, Eigen values are having value greater than 1 which shows that the factor extracted would be equivalent to three. Rotated component matrix with Kaiser Normalization helped in data reduction. The matrix explains that the factors extracted are the combination of how many variables. The principal component analysis under the rotation converged into three iterations. The following three components have been extracted :

Component 1 : Sophisticated
Component 2 : Cost, Handling
Component 3 : Update, effectiveness.

The above factor represents the combination of variables under communication dimension. In the first extraction of factor loading, 'sophisticated' is having highest loading, i.e., 0.818, which implies that electronic banking provides sophisticated information to well educated customers. People perceive that service of electronic banking is more useful and valuable for educating community as large proportion of people are involved in service sector having their own Personal Computer, laptop and computer. So, they can get any sort of information regarding their account balance, transfer of funds, clearing services, mobile recharging, etc. and they can get any sort of information well in time through internet banking with the help of transactional and informational websites of banks. It brings out that the benefit of e-banking is mainly enjoyed by the educated customers only.

In the second Matrix, two factors are having value closer to 1, namely,

'cost' and 'handling', with 0.727 and 0.731 respectively. As e-banking explains the cost of service as well as assurance to the customer that the problem will be handled, it means explaining something about the service as well as giving assurance to customer as a feedback means e-banking services are informative and helpful in data handling and cost reduction. 'Update' and 'effectiveness' dimension is having high loading in the interpretation of third factor. It implies that e-banking provides latest and effective information to the customers.

COMPETENCE

The competence factor consisted of four variables and each of these variables was analyzed using factor analysis. The analysis shows that the Eigen value represents 47.39 per cent of the variance of data. There are three variables having value closer to 1 and above 0.7. The variables extracted were 'Easy', 'Trusted' and 'Punctuality'. These three factors explained that the transfer of funds due to RTGS, ECS and EFT is easier and services provided through e-banking are adequate, accountable, faster and transparent.

CREDIBILITY

The credibility factor consisted of four variables. In this factor, two variables have Eigen values greater than 1 and as such two factors will be extracted with rotated component matrix and Kaiser Normalization. These are:

Component 1 : Reputation, trustworthy

Component 2 : Ability

In the first extraction, the variables named 'reputation' and 'trustworthy' are having high loading closer to 1. It can be inferred that e-banking services increase the honesty, reputation and trustworthiness of the banks by providing on time and desirable services. In the next category, there is only one factor having a loading of 0.828. The factor so called is 'ability' as e-banking enhances the ability to fulfil the requirement of the customer that was earlier not possible by brick and mortar banking.

RELIABILITY

The reliability factor consisted of three variables and each of these variables was analyzed using factor analysis. The factor loading of all the statements was calculated and it was found that the loadings of all the statements were greater than 0.4, and thus, all were accepted. The Cronbach alpha and Eigen values are 0.699 and 1.502 respectively which suggest a good consistency of the data. Only

one factor having Eigen value greater than 1 explained 50.61 per cent of the data. Hence, only one component is extracted.

Component : Accuracy, Correctness

The component is a combination of two variables that is accuracy and correctness. As e-billing is more accurate than paper billing and records are kept correctly in online banking and can be retained for the longer period.

RESPONSIVENESS

The responsiveness factor consisted of four variables and each of these variables was analyzed using factor analysis. The factor loadings of all the statements were calculated and it was found that the loadings of all the statements were greater than 0.4, and thus, all were accepted. The Cronbach alpha and Eigen values are 0.679 and 2.051 respectively which suggest a good consistency of the data. There is only one Eigen value explaining 51.28 per cent of the data. The component matrix shows four variables and all the variables having value greater than 0.4. Hence, no factor can be rejected but three factors having loading greater than 0.7 and as such the following factors will be combined.

Component : Development, quality, quickness

These three out of four factors represent that e-banking is required for the development of economy, to improve the quality of service, and bring quickness in response. This shows that e-banking is a major factor for the growth and expansion of banking sector and the economy as a whole by reduction of wastage and less paper involvement in electronic transactions.

SECURITY

The security factor consisted of four variables and the Cronbach alpha and Eigen values are 0.691 and 1.811 respectively, which suggest a good consistency of the data. Only one factor having Eigen value greater than 1 explained 45.27 per cent of the data.

One factor 'confidence' having loading of 0.752 shows that people are highly satisfied with e-banking because the technology of banking is mainly operated through password, be it internet banking or ATM processing. Password facility provides confidentiality to all the transactions. So, much influence in security issue is of password facility which provides immense help to the customers in maintaining secrecy of their money as well as transactions.

TANGIBILITY

The tangibility factor consisted of six variables. The Cronbach alpha and Eigen values are 0.678 and 2.335 respectively explaining 38.91 per cent of the data. Only one factor having eigen value greater than 1 explained 38.91 per cent of the data. All the six variables have factor loadings greater than 0.4 but only those factors will be extracted which have loadings greater than 0.7. So, with the help of component matrix, two variables are extracted.

Component : Modern equipment, Hours

Installation of new machines, change in the infrastructure of banks in a modernized way has only been possible due to e-banking. Secondly, e-banking provides 24 hours access to the banking facility.

UNDERSTANDING

The understanding factor consisted of six variables. The values of Cronbach alpha and Eigen are 0.808 and 2.335 respectively. There is only one factor having Eigen value greater than 1 explaining 50.86 per cent of the data. 'Courtesy' is one of the main dimensions. But due to having only one sub-dimension it is added in the understanding dimension. Out of the six factors, two Eigen values are having value greater than 1, hence, rotated component matrix is having two iterations and the factors extracted are as follows :

Component 1 : Need, Assure

Component 2 : Relations

In the first matrix, we are having two factors with high loadings, that is, 'need' with 0.693 and 'assurance' with 0.718. It shows that e-banking suits the need of the customers and assures to provide the required information in time. In the second matrix, only one factor is having high loading that is 0.852 in relations. In the next matrix, the factor extracted is only one that is 'Relations' because e-banking helps in improving, attracting and retaining more customers.

CONCLUSION AND IMPLICATIONS

The study focused on the various dimensions of service quality being applicable on the banking industry. The factors taken into consideration provide a wide platform to the banking industry to consider the various factors important for the customer satisfaction and further improvement. Electronic banking has contributed a lot to improve the service quality. Nine dimensions were developed having the various sub-dimensions to measure the service quality. These scales measured access, credibility, communication, competence, reliability,

responsiveness, security, tangibility, and understanding. These factors give a wide choice in selecting the various factors important for the service quality. In order to judge the level of satisfaction among customers regarding the electronic banking services, a list of 43 service variables was compiled into the nine dimensions. The results showed that all the factors are not equally important for measuring the level of satisfaction. For the 'access' dimension, convenient location of ATMs and point of sale terminal are highly ranked by the customers because their factor loading was very high. In the 'communication' dimension, electronic banking offers informative, sophisticated, cost effective, prompt and quick response to the customers. The competence of e-banking provides more convenient, transparent and accountable services to the customers. The elements of 'security', 'courtesy', and 'assurance' play a very vital role in banking industry. Similarly, in the dimension of 'tangibility' e-banking provides advanced way of delivering the services and 24 hours services are considered more important because of the round the clock services to the customers. The 'understanding' dimension of service quality is considered to be equally important in various other sub-dimensions. The factors like assurance of delivering the services, suitable according to the needs of the customers and improving the relations with the customers play an important role. Similarly, responsiveness in e-banking is defined as the response of the services through e-banking which is very quick and fast. In 'reliability' dimension, customers loaded high value to accuracy and correctness of e-banking services, so e-banking is an improvement over traditional banking service. So, the conceptualization of SERVQUAL instrument provided immense help in determining the level of service quality and the expectation of customers from the banking industry. With the help of this model, banks can focus more upon delivering qualitative electronic banking services to the customers.

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