

Customer's Perception regarding Service Quality of Internet Banking - An Empirical Study of Delhi

Swati Anand & Kailash Saklani

Abstract

This study aims at evaluating the service quality of internet banking (I-banking) services in Delhi from a customer's perspective. A structured questionnaire containing 44 quality items was administered to various target groups. Seven quality dimensions, viz. reliability, accessibility, user friendliness, privacy/security, efficiency, responsiveness and fulfilment, are identified based on principal component factor analysis. Demographic analysis of data reveals that gender is hardly a bias for use but evaluation of service quality of I-banking in most of the cases across various categories of customers is. A valid mathematical model is proposed to assess the overall service quality using regression analysis. The results show that customers are satisfied with quality of service on four dimensions such as reliability, accessibility, privacy/security, responsiveness and fulfilment, but least satisfied with the 'user-friendliness' dimension. The empirical findings not only prioritise different parameters but also provide guidelines to bankers to focus on the parameters on which they need to improve.

Keywords: *e-banking; internet banking; i-banking; customer's perspective; service quality*

Introduction

Competition and the constant changes in technology and lifestyles have changed the face of banking. Nowadays, banks are seeking alternative ways to provide and differentiate amongst their varied services. Customers, both corporate as well as retail, are no longer willing to queue in banks, or wait on the phone, for the most basic services. They demand and expect to be able to transact their financial dealings where and when they wish to. With the number of computers increasing every year, the electronic delivery of banking services is becoming the ideal way for banks to meet their clients' expectations.

Online banking or e-banking can be defined as online systems which allow customers to plug into a host of banking services from a personal computer by connecting with the bank's computer over the telephone wires. Technology continues to make online banking easier for the average consumer. Banks are using a variety of names for online banking services, such as PC banking, home banking, electronic banking or Internet banking. Regardless of the given name, these systems certainly offer specific advantages over the traditional banking methods.

Providing I-banking is increasingly becoming a 'need to have' than a 'nice to have' service. The I-banking, thus, now is more of a norm rather than an exception in many developed countries due to the fact that it is the cheapest way of providing banking services (Arunachalam and Sivasubramanian, 2007). Internet banking is a new delivery channel for banks in India. The I-banking channel is both an informative and a transactional medium. However, I-banking has not been popularly adopted in India as expected (Ravi *et al.*, 2007). Malhotra and Singh (2007) carried out a study to find the I-banking adoption by the banks in India. The study suggests that larger banks or banks with younger age, private ownership and lower branch intensity possess high probability of adoption of this new technology. Banks with lower market share also perceive I-banking technology as a means to increase the market share by attracting more and more customers through this new channel of delivery. However, the service quality in I-banking from customers' needs a thorough analysis to find out the determinants for success and growth of this new channel of delivery in India so that useful guidelines for bankers can be extracted. To this end, this study aims at determining the service quality of banks operative in India with regards to I-banking and identifying the important parameters crucial for service quality from the customer's perspective. The study also explores the importance of parameters across the demographic profile of the respondents.

Development of I-banking in India

The financial reforms that were initiated in the early 1990s and the globalisation and liberalisation measures brought in a completely new operating environment to the banks. The bankers are now offering innovative and attractive technology-based services and products such as 'Anywhere Anytime Banking', 'Tele-Banking', 'Internet Banking', 'Web Banking', etc. to their customers to cope with the competition. The process started in the early 1980s when Reserve Bank of India (RBI) set up two committees in quick succession to accelerate the pace of automation of operations in the banking sector. A high-level committee was formed under the chairmanship of Dr. C. Rangarajan, the then Governor of RBI, to draw up a phased plan for computerisation and mechanisation in the banking industry over a five-year time frame of 1985–1989. The focus by this time was on customer service and two models of branch automation were developed and implemented. Having gained experience in the earlier mode of computerisation, the second Rangarajan committee constituted in 1988 drew up a detailed perspective plan for computerisation of banks and for extension of automation to other areas such as funds transfer, e-mail, BANKNET, SWIFT, ATMs, I-banking, etc.

The Internet Users in India

The role of internet is becoming inevitable in corporate and society. Across the world, governments and corporates are increasingly working towards the better utilisation of the internet. The internet which was initially perceived as a communication media is now metamorphosing into a powerful business media (Sakkthivel, 2006). According to the Internet & Online Association of India (IOAI), the Indian internet population is currently over 25 million and is expected to grow to 100 million by 2007 (Survey by New Media Review, 2005). In July 2005, Internet World Status reported that there were 39,200,000 internet users in India representing

3.6 per cent of the population. (*Internet World Status*, August 2005). Even with millions of web users in its cities, the internet penetration rate for India remains well below 5 per cent. Despite India's technology outsourcing power, the country's internet penetration rate is low. JuxtConsult, a research firm based in New Delhi, surveyed urban internet users in April 2005 by talking to 30,000 Indian web users about their lifestyle and their web use. There are about 17.5 million urban dwellers in India who use the internet consistently with an additional 5.2 million who use it occasionally.

Service Quality in the Context of I-banking

Customer perspective: From the perspective of the customer, the service quality differentiates sought quality and perceived quality. Sought quality is the level of quality customers explicitly or implicitly demand and expect from service providers. The sought quality (customer expectations) is created due to several factors – primarily, the expectations are formed during a previous personal experience of a customer with a service, and the customer is influenced by the experiences of the other users and by the image of an organisation. Perceived quality means the overall impression a customer has and experiences about the level of quality after service realisation. The potential difference between the sought quality and the perceived quality gives the service provider an opportunity to measure customer satisfaction based on formulating the precise and actual criteria according to which the customers are assessing the services.

Bank perspective: From the provider's perspective, there are target qualities and delivered qualities underlying technology.

Objectives and Research Methodology

One of the primary concerns of this paper is to identify the important parameters affecting the service quality of I-banking. To determine the dimensions of I-banking and their relationships with the overall service quality, a questionnaire survey was conducted. The questionnaire was finalised using focus group discussion with ten I-banking users and a detailed discussion with the managers of four banks including public sector, private sector and foreign banks. The questionnaire consisted of two parts. The first part comprised 12 questions concerning the demographic profile of the respondents and the second part consisting of 32 questions explored the respondent's perception about the service quality of I-banking. In the last question, the respondents were asked about the overall ranking of the quality of I-banking.

Data Collection

Customers with at least one year of experience in I-banking in Delhi were identified by visiting retail branches/ATM branches of different banks across the country. A total number of 600 IDs were collected from the selected banks (Public sector bank: 400, Private sector bank: 100 and Foreign bank: 100). The survey instrument was administered through the medium of internet with an e-mail attachment of the questionnaire to all 600 IDs collected. By the cut-off date (31 March 2008), 50 messages were returned undelivered, 50 had not responded and 100 responses were incomplete. Finally, 400 usable responses were received which were about 66 per cent of the total e-mails sent. Among these usable responses, the shares of public

sector, private sector and foreign banks were of 45, 51 and 38 per cent , respectively. The collected data was subjected to various statistical analysis such as factor analysis, testing of hypotheses and regression analysis using SPSS 14.0 to obtain an insight into the responses collected.

Factor Analysis

First, the factor analysis was used to remove the redundant (highly correlated) variables from the survey data and to reduce the number of variables into definite number of dimensions. The application was done using SPSS 14.0. The factor analysis was performed using the principal component extraction method with varimax rotation. In the initial application, the number of variables was reduced from 44 to 26. In the second application, these 26 variables were classified under seven dimensions based on their factor-loading score. The sorted rotated values of factor loading with minimum value of 0.5 or more were considered and are shown in Table 1.

Table- 1 Sorted rotated factor loadings with varimax rotation

Variable No	Variable Definition	F1	F2	F3	F4	F5	F6	F7
Var 1	Information that is provided is accurate	0.947						
Var 2	The web page are functioning properly	0.84						
Var 3	Information content and text are easy to understand	0.783						
Var 4	Links are problem free, accurate and page downloads quickly	0.587						
Var 5	The bank's site has unrestricted access to all financial information		0.959					
Var 6	The bank provides the updated technology regularly for I-banking		0.799					
Var 7	The web pages do not freeze after you have put in all your information		0.615					
Var 8	The bank is easy to approach and contact		0.605					
Var 9	The web site is available in the language you can understand			0.859				
Var10	The bank's site provides information about the traditional products			0.841				
Var11	Personalisation of bank's site for customer's personal requirement			0.788				

Variable No	Variable Definition	F1	F2	F3	F4	F5	F6	F7
Var12	The bank authority cares to listen to your queries and meet your personal needs			0.672				
Var13	You can rely on bank for not missing your information				0.893			
Var14	You can rely on the personal information remaining confidential on request				0.883			
Var15	The bank provides financial security and confidentiality				0.7			
Var16	The bank's site is secured for your credit card information				0.56			
Var17	The bank's site is easy to navigate and simple to use					0.833		
Var18	The speed of log in of your account is fast					0.812		
Var19	The speed of log out of your account is fast					0.807		
Var20	It is easy to find policy and notice statement on the bank's site					0.75		
Var21	The bank takes care of problems properly and compensates for the problems						0.936	
Var22	Knowledge and skill of the contact personnel						0.836	
Var23	You are able to talk to customer service representative in the bank over phone						0.604	
Var24	The bank is willing to help customers, provide prompt service and information						0.557	
Var25	The bank's site performs the service right at the first time							0.812
Var26	The bank's site provides a conformation of the service ordered quickly							0.74

Based on the results of factor analysis, the variables were classified into seven dimensions, which were suitably named. The dimensions and the corresponding variables are shown below.

Dimensions	Variables
Reliability (X1)	Var 1, Var 2, Var 3,Var 4
Accessibility (X2)	Var 5, Var 6, Var 7,Var 8
User-friendliness (X3)	Var 9, Var 10, Var 11,Var 12
Privacy/security (X4)	Var 13, Var 14, Var 15,Var 16
Efficiency (X5)	Var 17, Var 18, Var 19,Var 20
Responsiveness (X6)	Var 21, Var 22, Var 23,Var 24
Fulfilment (X7)	Var 25, Var 26

Generally, factor loading represents how much a factor explains a variable. High loading indicates that the factor strongly influences the variable. Assuming a factor loading of more than 0.80 as having high impact on the variables, it is concluded from the above Table 1 that some variables which are less than 0.80 need attention for the quality improvement of I-banking in the Indian context.

Correlation analysis

To find the degree of association between the dimensions identified correlation analysis was applied.

Table -2 correlation coefficients between the various dimensions

Dimension	X1	X2	X3	X4	X5	X6	X7
X1	1						
X2	.731**(.000)	1					
X3	.377**(.000)	.091**(.004)	1				
X4	.398**(.000)	.278**(.000)	.644**(.000)	1			
X5	.086**(.000)	.081*(.011)	.389**(.000)	.404**(.000)	1		
X6	.200**(.000)	.081(.562)	.022(.491)	.265**(.000)	.015(.645)	1	
X7	.190**(.000)	.066*(.037)	.130**(.000)	.048(.129)	.128**(.000)	.751(.000)	1

Note: * Correlation is significant at the 0.05 level (2-tailed).

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

It is interesting to observe the highest degree of significant positive correlation between X7 (fulfilment) and X6 (responsiveness). A high degree of significant positive correlation is also observed between reliability (X1) and accessibility (X2), privacy/security (X4) and user-friendliness (X3). Again, most number of negative correlations are observed in the row containing X7 with X1, X3, and X5, but these correlations are of low degree.

Regression analysis

Now, to gain a deeper understanding of the relationship between the overall service

quality of the I-banking and the identified dimensions, regression analysis was used. The independent variables and the dependent variable used in the regression analysis are as follows.

- **Independent variables:** The proposed seven dimensions were treated as independent variables for the regression equation. These are: 'Reliability' (X1), 'Accessibility' (X2), 'User-friendliness' (X3), 'Privacy/Security' (X4), 'Efficiency' (X5), 'Responsiveness' (X6) and 'Fulfilment' (X7).
- **Dependent Variable (Y):** The overall quality of I-banking services perceived and rated by customers is treated as dependent variable. The mathematical representation of the regression equation can be written as follows:

$$Y = b_0 + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + b_6 X_6 + b_7 X_7 \quad (1)$$

where the value of dependent variable b_0 = constant when values of independent variables are zero = also called intercepts, because it determines where the regression line meets the Y-axis $b_1 \dots b_7$ = coefficients that represent the estimated change in mean value of dependent variable for each unit change in the independent variable values. Now, considering the values from the Table 3, the regression equation will be in the following form:

$$Y = 1.93 + 0.0970 X_1 - 0.133 X_2 - 0.105 X_3 + 0.0446 X_4 - 0.0910 X_5 + 0.806 X_6 + 0.0095 X_7 \quad (2)$$

$$Y = 1.93 + 0.0970 X_1 - 0.133 X_2 - 0.105 X_3 + 0.0446 X_4 - 0.0910 X_5 + 0.806 X_6 + 0.0095 X_7 \quad (2)$$

Table- 3 Relationship between overall service quality and dimensions

Independent variable	Coefficient	Std.error	Coefficient	t	p
Constant	1.9332	0.2683		7.21	0
X1	0.0969	0.0353		2.75	0.006
X2	-0.1334	0.0552		-2.41	0.016
X3	-0.105	0.0388		-2.7	0.007
X4*	0.0446	0.0296		1.5	0.133
X5	-0.091	0.0323		-2.82	0.005
X6	0.8057	0.0201		40.11	0
X7*	0.0095	0.0161		0.59	0.554

Note: $R^2 = 61.2\%$; R^2 (adj.) = 61.0%.

Statistically not significant.

It is observed from Table 3 that the relationship between the overall service quality (Y) and the various dimensions (X1 ... X7) are more or less statistically significant at 95 per cent confidence level ($p < 0.05$). Also, the adjusted R^2 value is 0.61, which indicates that the relationship is statistically significant. Five dimensions such as 'Reliability' (X1), and 'Accessibility' (X2), 'User-friendliness' (X3), 'Efficiency' (X5)

and 'Responsiveness' (X6) are statistically significant ($p < 0.05$). In addition, the 'Responsiveness' (X6) dimension has the greatest influence on overall service quality followed by 'Reliability' (X1), and 'Accessibility' (X2). However, two dimensions, 'Privacy/Security' (X4) and 'Fulfilment' (X7) are not statistically significant, indicating need for further improvement in these dimensions.

Demographic characteristics of the respondents

In order to investigate the impact of service quality dimensions on the demographic profile of the respondents, we conducted a two-sample t -test to examine whether the mean difference in the response rate of male and female for various professions is statistically significant or not. The hypothesis tests were done in t -statistics as follows:

Null hypothesis: $H_0: \mu_1 - \mu_2 = 0$

Alternative hypothesis: $H_1: \mu_1 - \mu_2 \neq 0$

Level of significance: $\alpha = 0.01$

Criterion: Reject null hypothesis if $t > t_{\alpha/2}$ or $t < -t_{\alpha/2}$.

The responses of males and females for various professions, age group and income group were sorted out from the main survey data for the two-sample t -test. Table 4 shows the p -values of two-sample t -test for males and females for different conditions. It is interesting to note that there is no significant difference in the opinion of males and females for the categories C3 and C4 on the dimension 'reliability' across all classes of respondents, except the business class where C3 is significant. Similarly, in the dimension 'accessibility' there is no difference in the categories C1 and C4. Again, the exception is observed in the business class. In the dimension 'user-friendliness' there is no significant difference in the judgement of respondents in the categories C2, C3 and C4. The exception observed is C4 in the business class again. Moreover, in the business class the category C1 is not statistically significant. In case of dimension 'privacy/security' there is no significant difference in the perception of respondents corresponding to the category C2 and C4, except for the opinion of the industrial employees, for which the difference between the perspectives of males and females in the above classes are statistically significant. A similar trend can be observed for the dimension 'responsiveness', where all the respondents in the categories C1 and C4 demonstrate significant difference in the average response of males and females except the industrial employees. In the 'efficiency' dimension, there is no significant difference in the view of males and females in the categories C1, C2 and C4 for all the respondents, excepting business class. However, for the respondents of business class, the difference is significant in the categories C1 and C4.

Finally, a mixed result is observed in case of the dimension 'fulfilment'. There is no significant difference between the perceptions of males and females for the categories C1 and C2 for students and faculties, C1 and C3 for government/private employees, C3 and C4 for industrial employees and C1, C3 and C4 for business class, respectively. The above result shows that the business class differs from other classes in their perception about the service quality of I-banking.

Table-4 Demographic characteristics of the respondents

<i>Variables</i>	Students				Employees (govt & pvt)				Employees(industry)				Business			
	<i>C1</i>	<i>C2</i>	<i>C3</i>	<i>C4</i>	<i>C1</i>	<i>C2</i>	<i>C3</i>	<i>C4</i>	<i>C1</i>	<i>C2</i>	<i>C3</i>	<i>C4</i>	<i>C1</i>	<i>C2</i>	<i>C3</i>	<i>C4</i>
Reliability	0.001	0.005	0.472	0.378	0.003	0	0.22	0.389	0	0.001	0.003	0.068	0.363	0	0	0.181
Accessibility	0.131	0.005	0.472	0.238	0.261	0	0	0.209	0.026	0.003	0.007	0.277	0	0	0.001	0.001
User friendly	0.002	0.341	0.142	0.245	0	0.312	0.119	0.166	0.003	0.041	0.129	0.401	0.274	0.019	0.044	0
Privacy/Security	0.001	0.01	0	0.176	0	0.302	0	0.27	0.238	0	0	0.001	0.389	0	0	0.103
Responsiveness	0.021	0.003	0	0.015	0.027	0	0	0.344	0	0.34	0	0	0.003	0.044	0.013	0.012
Efficiency	0.327	0.368	0.002	0.209	0.063	0.144	0	0.294	0.352	0.149	0.248	0.003	0	0.454	0	0.001
Fulfilment	0.121	0.002	0	0.001	0.004	0	0.305	0	0	0	0.232	0.002	0.121	0.006	0.008	0.184

Conclusions

The paper explores the service quality of I-banking operative in Delhi from customer's perspective. It is observed that customers are satisfied with the reliability of the services provided by the banks but are not very much satisfied with the dimension 'User Friendliness'. A seven-dimension model using regression analysis is developed for measuring the overall service quality of I-banking. The result indicates that the two dimensions, viz. 'Privacy/Security' and 'Fulfilment' are not contributing significantly towards the overall service quality. This is an indication that the customers feel that bankers fail in providing the services on these two dimensions satisfactorily. It is also observed that the opinion of males and females of business class differs from the other classes. The I-banking is going to be very crucial for India, which has an increasing percentage of younger generation population with computer literacy. Since research on service quality in I-banking is still in its infancy and the relevant literature is scarce, therefore the insight gained in this study may offer a foundation for future research on self-service technology and provide useful recommendations to the bankers for improving the I-banking services. The limitation of this study is that the result should not be generalised, as the service quality of I-banking has been tested in urban India. Furthermore, a small sample may not be the representative of the whole population and hence, in future, the research can be conducted by taking a large sample to facilitate a robust examination of the service quality of the I-banking. The future study can also be conducted to identify the relative importance of each dimension. The extension of this study can also include the providers' (bankers') perspective to have a better understanding of the problem domain. Validation of model and extension of the results to other industries and also to different cultures are some of the future directions in which the academics and the practitioners can work with to enrich the service quality literature in I-banking.

References

- Achim, Machauer and Sebastian, Morgner (2001) "Segmentation of bank customers by expected benefits and attitudes", *The International Journal of Bank Marketing*, Vol 19, No.1, pp 6-15.
- Aggarwal, Manoj K., Muthukumaran, N.S. and Sharma, C.K. (1990) "The Psychographic Segmentation of the Indian Youth Market", *Journal of the Market Research Society*. Vol 32, No.2, pp. 251- 259.
- Anthony, Beckett. Paul, Hower and Barry, Howcroft (2000) "An exposition of consumer behaviour in the financial services industry", *The International Journal of Bank Marketing*, Vol 18, No.1, 15-25.
- Avinandan, Mukherjee and Prithwiraj, Nath. (2003) "A model of trust in online relationship banking", *The International Journal of Bank Marketing*, Vol 21 No.1, pp 5-15
- Boyd, William, L., Leonard, Lyros and White, Charles (1994) "Customer preferences for financial services", *The International Journal of Bank Marketing*, Vol 12, No1, pp 9-15
- David, Bejou, Christine, T, Ennew. and Adrian, Palmer. (1998) "Trust, Ethics and relationship satisfaction", *The International Journal of Bank Marketing*, Vol16, No 4, pp 170-175.
- Jackie, L, M, Tam. And Susan, H, C, Tai. (1998) "Research note: The Psychographic segmentation of the female market in Greater China", *International Marketing Review*, Vol15, No1, pp 61-67.
- James, W, Peltier., John, A, Schibrowsky., Don, E, Schultz. and John, Davis. (2002) "Interactive Psychographics: Cross - selling in the banking industry", *Journal of Advertising Research*, March-April, pp 7-22.
- Jane, M, Kolodinsky. Jeane, M, Hogarth. And Marianne, A, Hilgert. (2004), "The adoption of electronic banking technologies by US consumer", *The International Journal of Bank Marketing*, 22:4/5, 238-258.

- Philip, Gerrard, and Barton, J, Cunningham. (2001) "Singapore's undergraduates: How they choose which bank to patronize", *The International Journal of Bank Marketing*, Vol 19, No.3, pp 104-114.
- Rob Lawson, and Sarah Todd. (2003) "Consumer Preferences for payment methods: A segmentation analysis", *International Journal of Bank Marketing*, Vol 21, No.2, pp 72-79.
- Susan, H, C, Tai, and Jackie, L, M, Tam (1996) "A Comparative study of Chinese Consumers in Asian Markets – A Lifestyle Analysis", *Journal of International Consumer Marketing*, Vol 9. No 1, pp 25-42.
- Tao Sun., Marty Horn, and Dennis Merritt. (2004) "Values and lifestyles of individualists and collectivists: a study on Chinese, Japanese, British, and US consumers", *Journal of Consumer Marketing*, 21:1, 318-331.
- Walfriend, M, Lassar. Chris, Manolis, and Sharon, Lassar. (2005). "The relationship between consumer innovativeness, personal characteristics, and online banking adoption", *The International Journal of Bank Marketing*, Vol 23, No.2/3, pp 176-198.
- Wendy, W, N, Wan. Chung-Leung, Luk. And Cheri, W, C, Chow (2005) "Customers' adoption of banking channels in Hong Kong", *The International Journal of Bank Marketing*, Vol 23 No.2/3, pp 255-272.

Dr Swati Anand is a Lecturer, IMS, Dehradun.

Dr Kailash Saklani is a Lecturer, ICFAI, Srinagar (Garhwal) ICFAI University, Dehradun.