

# RELIABILITY OF "EBANKQUAL" SCALE: RETESTING IN INTERNET BANKING SERVICE SETTINGS

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## **Abstract**

The purpose of this study was to test reliability and validity of eBankQual scale. Basically this scale was developed for measurement of service quality and customer satisfaction in e-banking. In the present study, author has conducted survey of internet banking users and examined reliability and validity of eBankQual scale. This scale was tested using Cronbach's alpha reliability test which is well-known test. Result of the reliability and validity test shows that System Availability, E-Fulfillment, Accuracy, Efficiency, Security, Responsiveness, Easy to use, Convenience, Cost Effectiveness, Problem Handling, Compensation, Contact, Brand perception and Perceived value are most important dimensions of eBankQual Scale and it is reliable and valid for its further use.

**Keywords:** E-service quality, eBankQual, Scale reliability, Internet banking, Customer satisfaction

## **1. INTRODUCTION**

Indian Banking industry has modernized with the advancement of science and technology since last two decades. Specially, after implementation of first phased plan (1985) of bank computerization in India and various plans and programmes implemented by the RBI Indian commercial banks are adopting and implementing Information and Communication Technology for management of banks and for providing innovative banking services to their customers. Present status of Indian commercial banks shows that almost of banks and branches are computerized and acquainted with CBS (Core Banking Solution). Even, commercial banks working in rural areas also providing most of e-banking services like internet banking, mobile banking, NEFT, RTGS, ATM, credit cards, POS etc. Basically e-banking includes all non-traditional and electronic means of banking such as ATM, internet banking (IB), mobile banking, banking through credit cards and debit cards etc. However, in recent day's internet banking becoming more popular service because of its utility and convenience. However, there is extreme need that, service quality of internet banking and customers satisfaction in internet banking should be tested to know that either it is as per expectation or not. Therefore, the present study was conducted.

## 2. OBJECTIVES

This study intended for three major objectives; the first objective is to identify the important dimensions of internet banking service quality and develop comprehensive scale for assessment of internet banking service quality and customer satisfaction. Second objective of the study is to examine the dimensionality and reliability of the proposed scale in the internet banking (IB) service settings and their further applicability.

## 3. REVIEW OF LITERATURE AND RESEARCH GAP

Increase in service quality of the banks can satisfy and develop attitudinal loyalty which ultimately retains valued customers (Khan, M. M. (2009). There is very strong relationship between quality of service and customer satisfaction (Parasuraman et al, 1985). The higher level of perceived service quality results in increased customer satisfaction. When perceived service quality is less than expected service quality customer will be dissatisfied (Jain and Gupta, 2004). Parasuraman, Zeithaml and Berry (1988) posited that if there is expected quality of service and actual perceived performance is equal or near about equal there is customers can be satisfy, while a negative discrepancy between perceptions and expectations a 'performance-gap' as they call it causes dissatisfaction, a positive discrepancy leads to consumer delight.

The relationship between expectation, perceived service quality and customers satisfaction have been investigated in a number of researches (Zeithaml, et al, 1993). An expectation is minimum requirement of service quality by service providers to the meet customers wants and needs. According to Parasuraman et al (1985, 1988) perceived service quality is viewed as the degree and direction of discrepancy between customers' perceptions and desires. However, according to Cronin and Taylor (1994) satisfaction super ordinate to quality-that quality is one of the service dimensions factored in to customer satisfaction judgment. Subsequent to this effect satisfaction may reinforce quality perception, but only indirectly. Customer satisfaction can be obtainable with low quality, whenever one's expectations in a given situation are low and performance is adequate to the task. Emergency situation fit this scenario well. Similarly, dissatisfaction with high quality can ensue when some element of the service delivery is not up to personal expectations. Thus we conclude that, service quality as effecting service satisfaction at the encounter specific level and aggregation level plays a critical role in customers' satisfaction. An obtained 'Value' of service or product also one of the most important factors affecting on customers satisfaction. There are close relationship between service value and customers

satisfaction. Value may be conceptualized as arising from both quality and price or from what one gets and what one gives (Zeithml, 1998). Value increases as quality increases and as price decreases.

Customer satisfaction represents a measure of organizations performance according to customer needs; therefore, the measure of customer satisfaction provides a service quality measure. Customers express their points of view about the services by providing judgments on some service aspects. In the SERVQUAL instrument of measuring service quality consists dimensions of reliability, responsiveness, competence, curtesy, credibility, security, access, communication, and understanding the Customer (Parasuraman, Zeithml and Berry, 1985, 1988). We have conceptualized customer satisfaction as an individual's feeling of pleasure or disappointment resulting from comparing a quality of service perceived in relation to his or her expectations.

Service quality of IB depends up on quality of banking service and quality of internet service provided by telecommunication department or service providers. Only banking institutions are not responsible for quality of IB services. Sathye (1999) mentioned that the quality of internet connection is also one of the more important factors in the adoption of IB. High quality of internet connection leads to adoption of IB. However, irregular and low speed internet connectivity adversely affects on adoption of IB. However, Parasuraman, Zeithaml & Malhotra (2005) mentioned that efficiency fulfillment, system availability, privacy, responsiveness, compensation and contact are core dimensions of e-service quality. They provided E-S-QUAL and E-RecS-QUAL scales to assess service quality of e-services which is highly cited tool. Gan et. al. (2006) mentioned that service quality dimensions, perceived risk factors, user input factors, price factors and service product characteristics influence consumer decision making process in adoption of e-banking.

Cost effectiveness is another important factor in the transition to the employment of online banking services; lower price for banking service and lower cost for internet access leads to adopting IB service. Generally customer are comparing new services with old one if they realized that the new service is more cost effective than old service they adopt new service. Li and Zhong (2005) mentioned that cost of computer and cost of internet access also one of the important aspects in adoption of internet banking services. Li & Worthington, (2004) and Sohail & Shanmugham, (2003) also posited that the cost of computers and internet connections are important elements in using IB. Zheng and Zhong (2005) also realized that costs for computer and internet access are major factors in adoption of IB.

Mattila and Mattila (2005) claimed that security has been widely recognized as one of the main barriers to the adoption of IB in Finland and Khalfan et al. 2006 and Al-Sabbagh and Molla 2004 also mentioned that, security concerns have been one of the major issues in the e-banking adoption in the Omani

banking industry. Abid and Noreen (2007) posited that Cash culture is still prevalent in Pakistan compared to the plastic money replacement that has been adopted in most of the developed countries. They also mentioned that the most important reasons are lack of trust, non-availability of infrastructure, security and service charges. Sathye (1999) mentioned that 73% of people avoided the adoption IB because they do not sure about safety and security of transactions over the internet and Al-Alawi (2005) also posited same arguments. Even many researchers argued that the lack of trust is a critical issue that needs addressing pertaining to the internet and E-commerce adoption.

TABLE 1 – INSTRUMENTS AND SCALE AVAILABLE TO ASSESS SERVICE QUALITY

S.N.	MODEL/ SCALE	AUTHOR/S	DIMENSIONS	METHOD
1	Perceived Service Quality Model	Gronroos (1984)	Technical service quality, Functional service quality and Corporate image (professionalism and skill, attitude and behaviour, accessibility and flexibility, reliability and trustworthiness, service recovery, servicescape and reputation and credibility)	Ordinal
2	SERVQUAL	Parasuraman, Zeithaml and Barry (1985; 1998)	Reliability, Responsiveness, Assurance, Empathy and Tangibles	Likert Scale
3	SERVFERF	Cronin and Taylor (1994)	Reliability, Responsiveness, Assurance, Empathy and Tangibles	Likert Scale
4	WebQual	Loiacono, Watson and Goodhue (2000)	Information fit to task, interactivity, trust, responsiveness, design, intuitiveness, visual appeal, innovativeness, websites flow, integrated communication, business process and viable substitute, accessibility, speed, navigability and site content.	Likert Scale
5	SITEQUAL	Yoo and Donthu (2001)	<i>ease of use, aesthetic design, processing speed, and security</i>	Likert Scale
6	e-SQ and e-SERVQUAL	Zeithaml, Parasuraman, and Malhotra (2000)	<i>efficiency, reliability, fulfilment, privacy, responsiveness, compensation, and contact</i>	Likert Scale
7	E-S-QUAL and E-RecS-QUAL	Parasuraman, Zeithaml & Malhotra in (2005)	Efficiency Fulfilment, System availability, Privacy, Responsiveness, Compensation and Contact	Likert Scale
8	LibQUAL+™	Cook et al 2003	Reliability, Responsiveness, Assurance, Empathy and Tangibles	Likert Scale
9	DigiQual	Association of Research Libraries, 2005	Reliability, Responsiveness, Assurance, Empathy and Tangibles	Likert Scale
10	GIQUAL	Tsoukatos and Rand (2007)	Responsiveness, Assurance, Empathy, Tangibles and Reliability	Likert Scale
11	BANKSERV	Akiran (1994)	polite, greet, help, promptness, neatness, apology, concern, mistake, security, informed, acctypes, advice, learn, know, servwhen, teller and staff number	Likert Scale
12	BANKZOT	Nadiri, et al (2009)	Desired, adequate, predicted and perceived service quality	Likert Scale
13	SOFTWARE Quality	Yang and Zhang (2009)	Completeness, Security, Adequacy, Simplicity, Self-descriptiveness, Functionality, Reliability, Facility, Efficiency etc.	Likert Scale
14	WEB-QUAL (Alternative)	Barnes and Vidgen (2002)	Usability, Design, Information, Trust, Empathy	Likert Scale
15	eTailQ	Wolfenbarger and Gilly (2003)	Design, Personalization, Fulfilment, reliability, privacy/security, customer service	Likert Scale

Source: Review of literature

Available literature shows that, the customer satisfaction is measured via service quality and service quality measured by various measurement tools and instruments (shown in Table 1) developed by various researchers and marketing consultancy organizations i.e. Gronroos's 'Perceived Service Quality Model, SERVQUAL, SERVPERF, SITQUAL, WEBQUAL, etc.

#### 4. THE "EBANKQUAL SCALE"

All of reviewed literature reveals that most of researchers have used service quality as instrument to assess customer satisfaction in service sector and used ordinal method to recording responses of the customers. Parasuraman et al, (1985; 1988; 2002; 2005) argued that customer satisfaction can be measured by Expectation-Perception Method. While, Cronin and Taylor (1994) have developed SERVFERF scale based on performance-only scale and they proved that it is superior method than SERVQUAL (Kumra 2008; Godwin et al, 2008;; Kumbhar, 2011). SERVPERF directly measures perception only to avoid the problem of an unambiguous expectations measure. According to Dabholkar et al (2002) SERVPERF have grate convergent and predictive validity as compared to SERVQUAL.

In the reviewing the literature on service quality and e-service quality there is debate about quality attributes and dimensions. Because of service intangibility, a firm may find it more difficult to understand how consumers perceive services and service quality. However, various scale and models used related study e.g. the Perceived Service Quality Model, SERVQUAL, SERVPERF, WEBQUAL, E-SQ, E-SQUAL, GIQUAL and E-RecS-QUAL model, SNCB, ACSI, NCSB, ECSI reveals that there are different dimensions of service quality e.g. Reliability, Responsiveness, Competence, Access, Courtesy, Communication, Credibility / Trustworthiness, Security, Empathy, Tangibles, Flexibility, Ease of Navigation, Efficiency, Price Knowledge, Site Aesthetics, Customization/Personalization, Privacy, Fulfillment / System Availability, Compensation, Contact, corporate image etc.

A eBankQual was basically invented by Jayawardhena (2006) with only five dimensions i.e. Access, Web interface, Trust, attention and Credibility but these are not sufficient dimensions to examine service quality of internet banking or any other service in e-banking. Therefore, based on prior studies and adding some additional factors author has developed eBankQual scale (Figure 1). The eBankQual instrument has developed using 12 service quality dimensions along with Brand perception and Perceived Value (Table 2).

In the model eBankQual System Availability, E-Fulfillment, Accuracy, Efficiency, Security, Responsiveness, Easy to use, Convenience, Cost Effectiveness, Problem Handling, Compensation and Contact are independent variables and Brand perception as well as Perceived value and overall

customer satisfaction in internet banking service are dependent variables. However, in case of only customer satisfaction in internet banking Brand perception and Perceived value are independent variables.

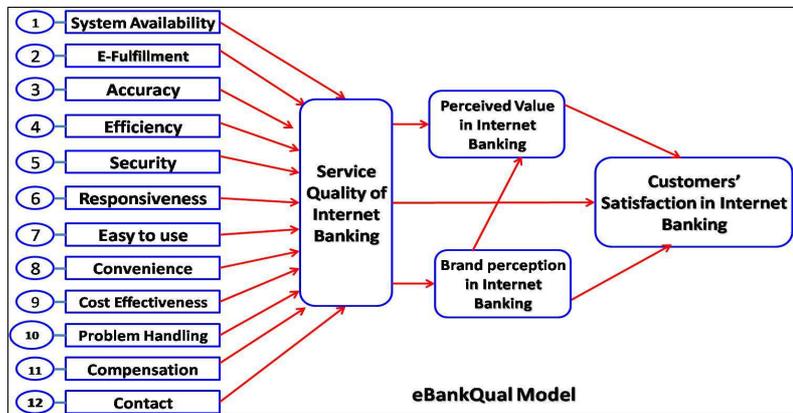


FIGURE 1 - EBANKQUAL MODEL

Source: Designed by Author

$$\text{Service Quality (SQ)} = (\text{SQ1} + \text{SQ2} + \dots + \text{SQ12}) \quad (1)$$

$$\text{Brand Perception} = f(\text{SQ1}, \text{SQ2}, \text{SQ3}, \text{SQ4}, \text{SQ5}, \text{SQ6}, \text{SQ7}, \dots, \text{SQ12}) \quad (2)$$

$$\text{Perceived value} = f(\text{Service Quality} + \text{Brand Perception}) \quad (3)$$

$$\text{Customer Satisfaction} = f(\text{Service Quality} + \text{Brand Perception} + \text{Perceived value}) \quad (4)$$

TABLE 2 – SERVICE QUALITY DIMENSIONS USED IN EBANKQUAL

DIMENSION	DESCRIPTION
1. System Availability	Up-to-date physical facilities – always available for service, availability of global network,
2. E-Fulfillment	Scope of services offered, digitalization of business information, Variety of services
3. Accuracy	Error free e-services through alternative banking channels
4. Efficiency	Speed of service, immediate and quick transaction and check out with minimal time.
5. Security	Trust, privacy, believability, truthfulness, and security, building customer confidence. freedom from danger about money losses, fraud, PIN, password theft; hacking etc.
6. Responsiveness	Recovery of the problem, prompt service, timeliness service, helping nature, employee curtsey , recovery of PIN, password
7. Easy to use	Easy to use & functioning
8. Convenience	Customized services, any ware and any time banking, appropriate language support, time saving
9. Cost Effectiveness	Price, fee, charges, - i.e. commission for fund transfer bill collection and payments', transaction charges, charges taken by Telecommunication Company, devise designer company, internet service providers
10. Problem Handling	It refers to problem solving process regarding internet banking services
11. Compensation	It refers to recover the losses regarding to problems and inconvenience occurred in using banking channels.
12. Contact	Communication in bank and customer or customers to bank, Via e-mail, interactive website
13. Brand perception	It is experience about brand reputation and actual perception of promised or assumed level of service quality.
14. Perceived value	Perceived value is compression between price or charges paid for the services by the customer as sacrifice of the money and utility derived by service perception

Source: Review of literature

## 5. DATA AND METHODS

This research is based on primary and secondary data sources. Secondary data sources were used for the development of eBankQual scale and primary data was used for testing reliability and validity of the scale. Primary data was collected from internet banking service users in Satara, Kolhapur and Rajapur cities of Maharashtra (India). The Kolhapur is one of the big cities, Satara is medium size city and Rajapur is semi urban type cities. These different type of cities was selected to reduce biasness in the primary data. Total 219 questionnaires were distributed to the internet banking users and out of them 180 were returned and fulfilled. All the respondents were selected using convenience and judgmental sampling method through vesting branches and prior discussion with branch managers about major user group of e-banking services. Only existing internet banking service users were covered in this study. Required data were collected through questionnaire and the questionnaire gathered information regarding demographic characteristics of the respondents and consumers' perception and view regarding to various aspects which influence decision to adopt internet banking. The questions were phrased in the form of statements scored on a 5-point Likert-type scale, where 1 = "strongly disagree," 3 = "neither disagree nor agree," 4 = "agree." and 5 = "strongly agree."

## 6. ANALYSIS OF THE DATA

Final empirical data was analyzed using SPSS 19. Cronbach's Alpha, item to total correlation was tested using reliability analysis. Each construct were tested for reliability by using a Cronbach's Alpha value of 0.70 as the cut-off point and only those items were selected which having Cronbach's Alpha value of 0.70 or more other items were eliminated from the scale.

## 7. RESULTS OF RELIABILITY AND VALIDITY TEST

### 7.1. *Service quality dimensions of eBankQual*

To identify the validity of items used in survey the Cronbach's alpha reliability test has been used. According to Hendrickson et al (1993) and McGraw and Wong (1996) the alpha of a dimensions should be greater than .700 for items to be used together as a scale. Therefore minimum 0.700 coefficient alpha values accepted to finalize the item validity. As per shown in table no 3 shows that the Cronbach's Alpha value of the 12 dimensions was .836 and Cronbach's Alpha Based on Standardized Items was .841 it means all the dimensions are suitable to the proposed model. Even, table no 3 also indicates that, Inter-Item Correlation Matrix of the each dimension of the scale was positively significant.

TABLE 3 – RELIABILITY STATISTICS &amp; INTER-ITEM CORRELATION MATRIX

CRONBACH'S ALPHA		CRONBACH'S ALPHA BASED ON STANDARDIZED ITEMS										N OF ITEMS	
.836		.841										12	
Inter-Item Correlation Matrix													
	System Availability	E-Fulfillment	Accuracy	Efficiency	Security	Responsiveness	Easy to use	Convenience	Cost Effectiveness	Problem Handling	Compensation	Contact	
System Availability	1.000												
E-Fulfillment	.378	1.000											
Accuracy	.370	.443	1.000										
Efficiency	.404	.328	.550	1.000									
Security	.332	.304	.211	.405	1.000								
Responsiveness	.481	.361	.414	.351	.174	1.000							
Easy to use	.448	.504	.367	.389	.574	.362	1.000						
Convenience	.141	.352	.221	.296	.381	.254	.154	1.000					
Cost Effectiveness	.391	.479	.404	.440	.250	.443	.377	.270	1.000				
Problem Handling	.335	.163	.070	.174	.181	.256	.124	.266	.286	1.000			
Compensation	.136	.251	.083	.108	.209	.188	.229	.332	.240	.391	1.000		
Contact	.244	.312	.268	.331	.276	.225	.361	.257	.300	.227	.417	1.000	

TABLE 4 – ITEM-TOTAL STATISTICS

	SCALE MEAN IF ITEM DELETED	SCALE VARIANCE IF ITEM DELETED	CORRECTED ITEM-TOTAL CORRELATION	SQUARED MULTIPLE CORRELATION	CRONBACH'S ALPHA IF ITEM DELETED
System Availability	41.52	42.850	.546	.415	.819
E-Fulfillment	41.18	45.143	.582	.441	.820
Accuracy	41.25	44.063	.492	.429	.823
Efficiency	41.41	43.644	.568	.456	.818
Security	41.71	42.716	.492	.470	.824
Responsiveness	41.33	44.300	.521	.375	.822
Easy to use	41.34	42.430	.585	.547	.816
Convenience	41.44	44.846	.434	.347	.828
Cost Effectiveness	41.52	42.341	.576	.394	.817
Problem Handling	41.97	44.462	.369	.285	.834
Compensation	42.06	44.483	.389	.325	.832
Contact	41.68	43.032	.482	.297	.825

Table 4 indicates that, all items in the eBankQual scale are more important. Because, Cronbach's Alpha reliability test dose not allow deleting any item from the scale. Column "Cronbach's Alpha if Item Deleted" revels that, if any of the item deleted from the scale Cronbach's Alpha will be reduced from

.836 to maximum .816 (in case of easy to use) and minimum .834 (in case of problem handling). Table 3 indicates that item to total correlation of problem handling and accuracy is .070 it is very low but Item-Total Statistics (table no 4) not permit to delete this item from the scale because it does not give any gain. Therefore all items are finalized in the service quality of internet banking.

**7.2. Service quality, brand perception and perceived value**

Table no 5 indicates that Cronbach's Alpha of service quality, brand perception and perceived value in internet banking is more than .700 it is .814 and Inter-Item Correlation also more significant as well as this test do not allow deleting any item from the scale. Therefore all items of the eBankQual scale were retained as it is.

TABLE 5 – RELIABILITY STATISTICS

CRONBACH'S ALPHA		CRONBACH'S ALPHA BASED ON STANDARDIZED ITEMS		N OF ITEMS	
.814		.839		3	
<b>Inter-Item Correlation Matrix</b>					
	SQ of IB	Brand perception	Perceived value		
SQ of IB	1.000	.577	.674		
Brand perception	.577	1.000	.650		
Perceived value	.674	.650	1.000		
<b>Item-Total Statistics</b>					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
SQ of IB	8.0333	3.038	.691	.488	.787
Brand perception	7.7778	2.084	.677	.458	.737
Perceived value	7.7778	1.794	.737	.557	.682

**8. CONCLUSION AND DIRECTIONS FOR FURTHER RESEARCH**

This study offers modified eBankQual scale for assessment of service quality and customer satisfaction in internet banking. It is modified version of E-S-Qual offered by Parasuraman et al (2005) to assess e-service quality in general and eBankQual offered by Jayawardhena (2006). Both Parasuraman et al (2005) and Jayawardhena (2006) mentioned that e-service quality of e-service is most important factors affecting on customers satisfaction; however, the dimensions of e-service quality may differ by the service. Hence author of the present research developed this scale to examine e-service quality of

internet banking services provided by the commercial banks. In this scale 12 dimensions of internet banking service quality and brand perception as well as perceived service value are included as determinants of customers' satisfaction (Figure 1). Although, this papers presents only internal consistency of the items (dimensions) used in the scale and its reliability as well inter item correlation. Results of this study indicate that, all proposed dimensions of eBankQual scale are reliable and having appropriate consistency. Therefore author recommends that, eBankQual scale having good psychometric properties based on findings from reliability and validity tests and it is useful to assess service quality of internet banking service and customers satisfaction also. However, further research and retesting of this scale also required because there may some possibilities of that, some important dimension are missing which is significantly important to assess service quality of internet banking services and customers satisfaction in internet banking services provided by the commercial banks.

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