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Refinement and Retesting of “eBankQual” Scale in Internet Banking Service Settings

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Refinement and Retesting of “eBankQual” Scale in Internet Banking Service Settings

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Abstract

The eBankQual scale was developed for measurement of service quality and customers' satisfaction in e-banking service setting. This scale was tested in earlier study and found good predictive ability. However, testing and retesting must be required to prove either this scale having strong predictive ability or not. Therefore, the present study was undertaken to retesting of eBankQual scale. In the present study, this scale was tested in internet banking service setting. This scale was tested using Cronbach's alpha reliability test and Structural Equation Modeling (SEM) using SPSS-20 and Amos-20. 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 and Perceived value are reliable dimensions of eBankQual Scale and it having good predictive ability in determination of customers' satisfaction in Internet Banking service.

Keywords: E-service Quality, eBankQual, Scale Reliability, Internet Banking, Customer Satisfaction

JEL Classification: G21, L81, L86;

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1.0 Introduction

The banking industry in India has witnessed tremendous changes linked with the developments in ICT over the years. Indian banking sector has made exploitation of ICT through the use of ICT in internal management as well as to provide better financial services to their customers through automated delivery channels. Many banks have invested huge capital in the ICT based banking system since last ten years. However, there is serious question of its usefulness and actual benefits to the customers. Everyone is talking that, perception in e-banking services is good; but question is that, *How to measure customers' satisfaction in e-banking? What are the indicators of customers' satisfaction in e-banking?*; nobody is talking about this. Therefore, the present study was undertaken to offer multidimensional scale for measuring customers' satisfaction in e-banking service setting.

2.0 Statement of the Problems

There are various scales and instruments available to assess service quality and e-service quality of various offline and online services as well as customers' satisfaction in service/e-service settings. However, very few scale and instruments are developed for assess e-service quality of e-banking services or online financial services. WEBQUAL, e-SQ, SITE-QUAL, E-SQUAL, E-S-Qual & E-RecS-Qual and EGOSQ scales are developed by various individual researchers and research organization to measure e-service quality of various services. Although, there is no exact and comprehensive instrument available to measure service quality of e-banking services (i.e ATM, Internet Banking, Mobile Banking, Electronic Fund Transfer service etc.). However, preliminary version of eBankQual was developed by Jayawardhena (2006) but it is not appropriate and comprehensive. Therefore, in the present researcher has developed advanced version of eBankQual Scale in 2010. This modified and advanced scale was tested in earlier study conducted by the author but author fills that there is need to retesting of this scale therefore the present research was conducted.

3.0 Objectives

This study was planned for following three objectives;

1. To determine the dimensions of customers' satisfaction in internet banking and update eBankQual scale
2. To check reliability of the dimensions applied in the eBankQual scale in deferent service setting
3. To test eBankQual scale and recheck its predictive ability as well its further applicability

4.0 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."

5.0 Review of Literature

5.1 Service Quality and Customers Satisfaction

Customers' satisfaction has become an important factor in any type of e-business because the end user often pays for the majority of new products and services, which indicates that new products characteristics such as perceived usability, usefulness, appeal and value of money must be matched or exceeded with user expectations toward the product (Wilson & Sasse, 2004). From this perspective, assessing the user experience is essential for many technology products and services (Wilson & Sasse, 2004). Several studies proved that there was strong relationship between service quality and customers' satisfaction (Parasuraman et al, 1985; Parasuraman, et al, 1988; Zeithaml, et al, 1993; Cronin and Taylor, 1994; Jain and Gupta, 2004; Khan, 2009) as well as service e-quality and e-customers' satisfaction (). However, customer satisfaction has mainly been examined with subjective measurements such as a multiple-item user questionnaire (Chin et al., 1988; Lewis, 2002; Lindgaard & Dudek, 2003).

5.2 Internet Banking and Customers Satisfaction

According to *Ernst & Youngs' Global Consumer Banking Survey 2011* conducted by Customer behavior in retail banking has changed dramatically over the past few years. Therefore, the banks should change their ways and style of banking service according to the demand of the customers in which these changing demands can be met by banks that offer customer focused innovative services to customers' satisfaction. Various service channels, Personalized attention, problem handling facility, trust in service,

Sathye (1999) mentioned that the quality of internet connection is also one of the more important factors in the adoption of IB and he mentioned that, high quality of internet connection leads to adoption of IB. **Abdullah et al (2011)** conducted study regarding to internet banking and customers perception in Pakistan. Results of their study reveal that reliability, convenience, speed, safety and

security have the major contribution to retain and attract the customers. **Aladwani (2001)** posited that, trust, security and safety are the most challenging issues for the banks. Beside them, to build and retain the customers' trust will also become a future challenge for banks especially in internet banking. **Rod. at al. (2009)** examine the relationships among service quality of internet banking and its subsequent effect on customer satisfaction in a New Zealand banking context; they mentioned that there was strong relationship between online customer service quality, online information system quality, banking service product quality, overall internet banking service quality and customer satisfaction. **Nupur (2010)**, identified that reliability, responsiveness and assurance was important factors in customers satisfaction in e-banking in Bangladesh. **Liao and Cheung (2008)** mentioned that, the service quality attributes that banks must offer to encourage consumers to switch to online banking are perceived usefulness, ease of use, reliability, security, and continuous improvement. However, **Qureshi et al (2008)** posited that, perceived usefulness, security and privacy are the most influencing factors to accept online banking and **Shah Ankit (2011)** mentioned that, help the bank management not only in improving the level of satisfaction but also strengthening the bond between the banks and their customers, thereby helping them to retain and/or expand their overall customer base. **HAMADI (2010)** mentioned that, Design of the site, Ease of use, Financial security, Interactivity, Information quality, Privacy and Privacy are more important factors in customers satisfaction in internet banking. **Stephen P. Jalulah (2011)** posited that, Accuracy of the online transaction process, Complete and sufficiency of the information, Protection of customer transaction data, Reliability and credibility of transactions, Relief of customer to transact on the portal, Ease of completion of online transactions, Ease of understanding and Sufficient and real time financial information are most expected factors by the customers in online banking service. Kesseven et al (2007) shown using factor analysis that ease of use and that other important elements featured reluctance to change, trust and relationship in banker, cost of computers, internet accessibility, convenience of use, and security concerns are important factors.

However, Parasuraman, Zeithaml & Malhotra in (2005) mentioned that efficiency fulfilment, 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. Apart from service quality of e-service 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 (Zeithaml, 1998). 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.

5.2 Instruments for Assessment/ Measuring Service Quality

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.

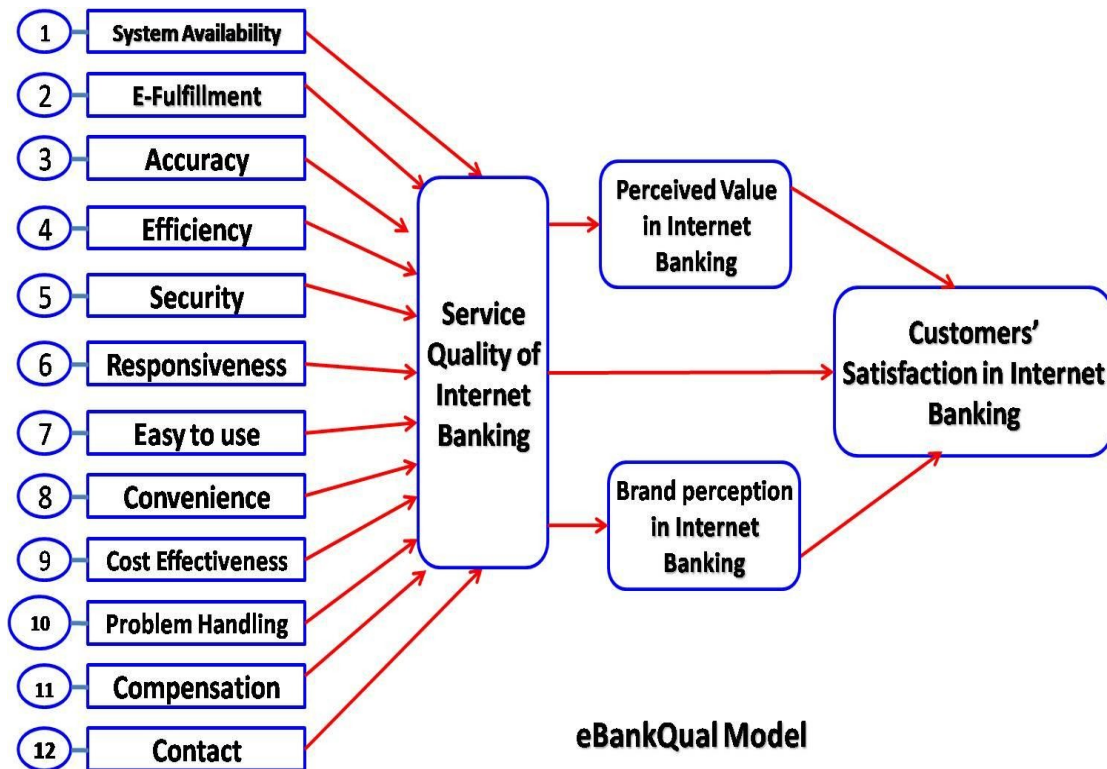
Table No. 1: Instruments and Scale Available to Assess Service Quality			
	Model/Scale	Author/s	Dimensions
1	Perceived Service Quality Model	Gronroos (1984)	Technical service quality, Functional service quality and Corporate image (professionalism and skill, attitude and behaviour, accessibility and flexibility, reliability and trustworthiness, service recovery, servicescape and reputation and credibility)
2	SERVQUAL	Parasuraman, Zeithaml and Barry (1985; 1998)	Reliability, Responsiveness, Assurance, Empathy and Tangibles
3	SERVFERF	Cronin and Taylor (1994)	Reliability, Responsiveness, Assurance, Empathy and Tangibles
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.
5	SITEQUAL	Yoo and Donthu (2001)	ease of use, aesthetic design, processing speed, and security
6	e-SQ and e-SERVQUAL	Zeithaml, Parasuraman, and Malhotra (2000)	efficiency, reliability, fulfilment, privacy, responsiveness, compensation, and contact
7	E-S-QUAL and E-RecS-QUAL	Parasuraman, Zeithaml & Malhotra in (2005)	Efficiency Fulfilment, System availability, Privacy, Responsiveness, Compensation and Contact
8	LibQUAL+™	Cook et al 2003	Reliability, Responsiveness, Assurance, Empathy and Tangibles
9	DigiQual	Association of Research Libraries, 2005	Reliability, Responsiveness, Assurance, Empathy and Tangibles
10	GIQUAL	Tsoukatos and Rand (2007)	Responsiveness, Assurance, Empathy, Tangibles and Reliability
11	BANKSERV	Akiran (1994)	polite, greet, help, promptness, neatness, apology, concern, mistake, security, informed, acctypes, advice, learn, know, servwhen, teller and staff number
12	BANKZOT	Nadiri, et al (2009)	Desired, adequate, predicted and perceived service quality
13	SOFTWARE Quality	Yang and Zhang (2009)	Completeness, Security, Adequacy, Simplicity, Self-descriptiveness, Functionality, Reliability, Facility, Efficiency etc.
14	WEB-QUAL (Alternative)	Barnes and Vidgen (2002)	Usability, Design, Information, Trust, Empathy
15	eTailQ	Wolfenbarger and Gilly (2003)	Design, Personalization, Fulfillment, reliability, privacy/security, customer service

Source: Review of Literature

6.0 Refined and Improved “eBankQual Scale” (Redesigned)

All of reviewed literature (Parasuraman et al, (1985; 1988; 2002; 2005); Cronin and Taylor (1994); Kumra 2008; Godwin et al, 2008;; Kumbhar, 2011a; Kumbhar, 2011b; Kumbhar, 2011c; Dabholkar et al (2002) 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. And according to Jayawardhena (2006) five dimensions i.e. Access, Web interface, Trust, attention and Credibility but these are important service quality dimensions for measuring quality of online banking service. However, dimensions mentioned by Jayawardhena (2006) not sufficient dimensions to examine service quality of internet banking. In 2011 Kumbhar, 2011a; Kumbhar, 2011b (present author) mentioned that, all 12 dimensions are influence service quality and perceived value as well brand perception independent variables. However, recent literature evidence that, connectivity (system availability), fulfillment, accuracy, security, easy to use and connivance influence overall service quality of internet banking and responsiveness, cost effectiveness, problem handling facility, compensation and contact facility affects brand perception in internet banking. Further, perceived Value in internet banking service influenced by overall service quality and brand perception in internet banking and overall perception affects customers’ satisfaction in internet banking. Therefore, eBankQual was modified as shown in Figure 1). The eBankQual instrument has developed using 12 dimensions along with Brand perception and Perceived Value ((Table No.2):

Figure 1: eBankQual (Hypothesized Model)



Source: Designed by Author

Table No. 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

7.0 Analysis of the Data

During the testing of the model we found that, there is no relationship between the all dimensions as hypothesized in the prior model (Figure 1). Therefore, we modified the model “eBankQaul” according to statistical results and logical relationship of the construct included in the present model and performed **SEM- Structural Equation Modeling** with the help of **IBM SPSS -20 & AMOS-20 software**.

7.1 Reliability Analysis and Discriminant validity

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 Hair et al. (1995); Sureshchandar et al. (2001); and Gerbing & Anderson (1988) and only those items were selected which having Cronbach's Alpha value of 0.70 or more other items were eliminated from the scale (Table 3a & 3b).

Table 3a: Reliability Statistics	
Cronbach's Alpha	N of Items
.791	7
Table 3b: Reliability Statistics	
Cronbach's Alpha	N of Items
.675	5

7.2 Structural Equation Modeling (SEM)

The SEM analysis estimates relationships between variables in the model. Assessment of fit essentially calculates how similar the predicted data are to matrices containing the relationships in the actual data. Chi-square statistics indicates that, the present model is strongly significant and it have a good predictive ability to predict customers" satisfaction in internet banking services provided by banking institutions. Chi-square results ($\chi = 351.434$; $df = 76$ at .000 sign.) shows that it is good model with goodness of fit (Table 4). According to Bollen & Long, (1993) , if sign. is .05 or less, the departure of the data from the model is significant at the .05 level. All Fit indices CFI, GFI, SRMR, RMSEA, RMR, PNFI and NFI show that this model is fit.

Table 4: Result (Default model): Chi-square & Goodness of Fit		
Chi-square	= 351.434	
Degrees of freedom	= 76	
Probability level	= .000	
Goodness of Fit		
	Criterion Guidelines	SEM Results
CFI	> .90	.810
GFI	> .80	.83
SRMR	< .05	.047
RMSEA	< .10	.084
RMR	< .05	.024
PNFI	> .50	.755
NFI	> .90	.911

Table-5 indicates that, all variables are good predictors because its Critical Ratio (C.R.) test is significant ($> \pm 1.96$, $p < .05$) ranging from C.R.= 4.350 to C.R. = 10.423, $p = .000$).

Table 5: Regression Weights: (Group number 1 - Default model)							
			Estimate	S.E.	C.R.	P	Label
Perceived Value	<---	Technical SQ	1.324	.267	4.968	***	par_11
Perceived Value	<---	Customer Care	.708	.129	5.492	***	par_12
Connivance	<---	Technical SQ	1.000				
Easy to use	<---	Technical SQ	1.752	.348	5.027	***	par_1
Security	<---	Technical SQ	1.693	.354	4.777	***	par_2
Efficiency	<---	Technical SQ	1.575	.312	5.057	***	par_3
Accuracy	<---	Technical SQ	1.482	.306	4.837	***	par_4
eFulfillment	<---	Technical SQ	1.072	.224	4.778	***	par_5
System Availability	<---	Technical SQ	1.502	.318	4.719	***	par_6
Contact Facility	<---	Customer Care	1.000				
Compensation	<---	Customer Care	.909	.179	5.090	***	par_7
Problem Handling	<---	Customer Care	.761	.175	4.350	***	par_8
Cost effectiveness	<---	Customer Care	1.050	.187	5.630	***	par_9
Responsiveness	<---	Customer Care	.687	.143	4.814	***	par_10
Overall Satisfaction	<---	Perceived Value	.565	.054	10.423	***	par_13

Table-6 indicates that all 15 measurement variables are significantly represent by their unobserved construct ($> \pm 1.96, p < .05$) . It means technical service quality, customer care and perceived value are significant measurement of the model and all measurement variables are significantly good predictors.

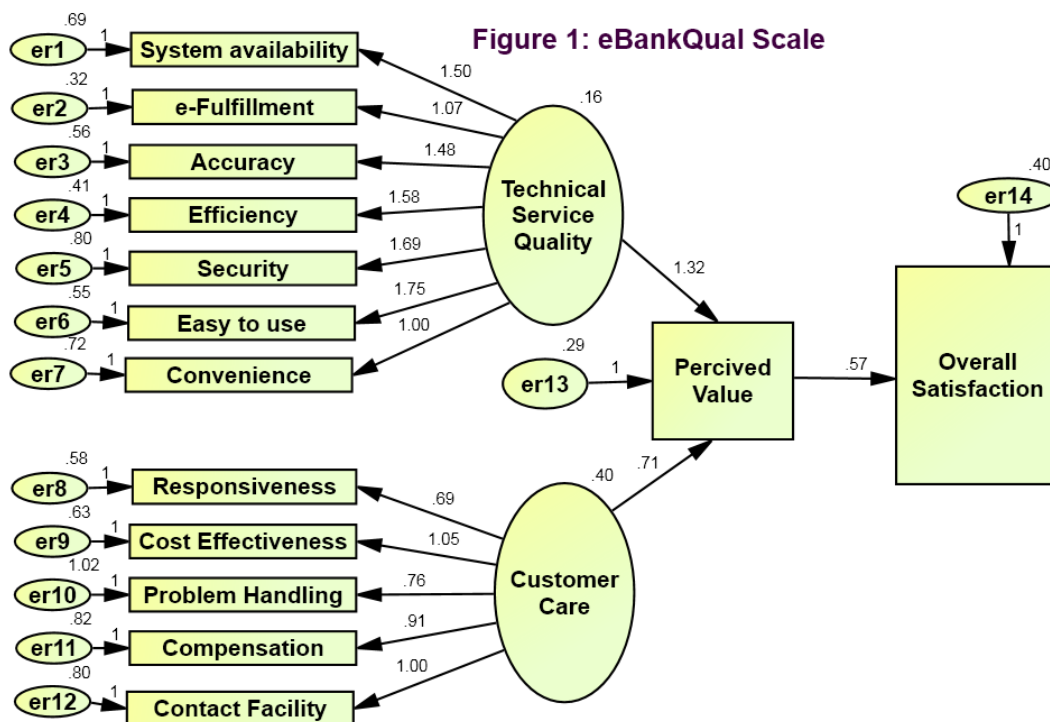
Observed		Unobserved	Estimate
Value	<---	Technical SQ	.600
Value	<---	Customer Care	.513
Convenience	<---	Technical SQ	.422
Easy	<---	Technical SQ	.684
Security	<---	Technical SQ	.599
Efficiency	<---	Technical SQ	.696
Accuracy	<---	Technical SQ	.617
eFulfillment	<---	Technical SQ	.599
System Availability	<---	Technical SQ	.582
Contact Facility	<---	Customer Care	.577
Compensation	<---	Customer Care	.536
Problems handling	<---	Customer Care	.431
Cost effectiveness	<---	Customer Care	.640
Responsiveness	<---	Customer Care	.494
Overall Satisfaction	<---	Perceived Value	.615

Table-7 indicates that, all dimensions explain good variance in the present model it ranging from .178 to .622; Thus for the 13 measurements explaining good variances in the model. For example; it is estimated that the predictors of Perceived Value explain 62.2 percent of its variance. In other words, the error variance of Perceived Value is approximately 37.8 percent of the variance of Perceived Value itself. The predictors of Convenience explain 17.8 percent of its variance. In other words, the error variance of Convenience is approximately 82.2 percent of the variance of Convenience itself.

	Estimate
Perceived Value	.622
Overall Satisfaction	.378
Responsiveness	.244
Cost effectiveness	.410
Problems handling	.186
Compensation	.288
Contact Facility	.333
System Availability	.339
eFulfillment	.359
Accuracy	.381
Efficiency	.485
Security	.359
Easy to use	.468
Convenience	.178

7.3 Final eBankQual Model after Testing

Figure 2 Indicates that, all 07 measurements are good predictors (Regression weights of respected measurements 1.502, 1.072, 1.482, 1.575, 1.693, 1.752 and 1.000) of technical service quality of internet banking and 05 measurements are good predictors (Regression weights of respected measurements .687, 1.050, .761, .909 and 1.000) of customer care regarding to internet banking. As well as technical service quality and customer care about internet banking service users are good predictors of customers’ satisfaction. Regression weights of technical quality (1.32) and customers care (.71) shows that these are good predictors of observed variable (Perceived Value). Perceived value is also best predictor (Regression weight = .57) of Overall satisfaction. All values near *er1 to er14* indicate the estimated variances of respected variables.



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 developed this scale to examine e-service quality of internet banking services. In this scale 12 dimensions of internet banking service quality and perceived service value are important determinants of customers’ satisfaction (Figure 2).

Results of this study indicate that, all proposed dimensions of eBankQual scale are reliable and having appropriate consistency and it is applicable to assess service quality as well as customers’ satisfaction in internet banking service setting. Therefore author recommend “eBankQual scale” for assessment of service quality of internet banking and customers satisfaction in it. 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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