

INTERFACES AMONG E-BANKING SERVICE QUALITIES, E-CUSTOMER SATISFACTION, AND E-LOYALTY

Sathyavany¹ & Shivany²

¹MBA Student, University of Jaffna, Srilanka, India

²Senior Lecturer, University of Jaffna, Srilanka, India

ABSTRACT

Banking is a demand-driven industry due to different preferences such as providing financial services to customers. Internet should be taken into account as an important issue for banks to delivery financial services. The internet is the ideal medium for carrying out banking activities due to its cost savings potential and speed of information transmission. From a technological and cost-driven standpoint, it may seem quite logical for banks to shift as many banking activities online as possible. At the same time, the question of how to foster customer loyalty arises when the relationship between the bank and the user becomes a virtual one. As it is completely necessary to perform a research studying the quality of services dimension in e-banking and measuring its effects on the customers' satisfaction and loyalty, and also lack of examinations previously in this area despite the importance and steady growth of e-banking services in Sri Lanka, negligible research attention has been given to the interactions among e-banking service quality dimension, e-customer satisfaction, e-loyalty, & personal factors in the Northern Province of Sri Lanka by using survey data and conceptual model. Quantitative methodology was conducted and Questionnaires were distributed to the internet banking users using Random Sampling procedure. A survey of 305 e-banking users of 7 selected banks in Northern Province of Sri Lanka has been conducted and a Structural Equation Modeling (SEM) approach by employing Smart PLS3 of statistical data analysis technique has been used to gain what are the interactions among e-service qualities, e-customer satisfaction, and e-loyalty and customer's personal factors can be ensured. Based on the result of analysis it can be concluded that there is a positive interaction among e-service qualities, e-customer satisfaction, and e-loyalty and also additionally there is a moderating effect by personal factors such as age, education and personal experience & knowledge are impacted the above interactions. According to the model content, e-convenience are considered more importance by revealing that customer relies on acquiring the exact service offered (time, accuracy, customization and convenience) and how the bank is handling customer problems. Also, customers depend on e-responses which mean providing the proper assistance and attaining customer needs & remedial actions. Finally, e-trust as security measures concerns over the adoption and online banking transaction is considered important when fighting against the hackers and vulnerabilities in dealing with online banking.

KEYWORDS: E-Banking Service, E-Service Quality, E-Customer Satisfaction, E-Loyalty

Article History

Received: 26 Nov 2018 | Revised: 04 Dec 2018 | Accepted: 15 Dec 2018

INTRODUCTION

In E-banking concept, attracting and keeping customers is a difficult and challenging problem for Commercial banks at present as a new one over the conventional or traditional/ branch banking concept. Therefore, banks and financial institutions strive to recognize factors which can attract customers and make them loyalty. Service quality is one of the critical success factors that influence the competitiveness of an organization. A bank can differentiate itself from competitors by providing high-quality service. Service quality is one of the most attractive areas for researchers over the last decade in the retail banking sector (Choudhury, 2008). Therefore, banks have to provide service carefully & improve the service level continuously and updated to changing environmental conditions for maintaining competitiveness in the banking industry. There is no guarantee that what is excellent service today is also applicable for tomorrow. To survive in the competitive banking industry, banks have to develop new strategies which will satisfy and retain their customer base as satisfaction is considered as the essence of success.

As competition for loyal customers is high in the banking sector, every bank is trying to be the “ideal bank” for their customers in exchange for profitable and committed relationships. They are trying to meet customer needs by providing an ideal set of products and an ideal level of customer service quality across an ideal combination of channels. Many banks use loyalty programs to reach that ideal state. However, most of these programs operate as single streams and don't take into account the different products, services, or channels customers use in their relationship with the bank. The secret to success is to build real relationships and provide “hook” products for each segment across the customer lifecycle. A bank that wants to focus on customer profitability will need to combine the right set of products with the right service levels. But that's not enough. There is one more essential ingredient is the right channels. The competition of providing quality service (be it a branch or online banking service) to customers is increasingly becoming tense in today's fast pace changing business environment. Therefore banks need to design an appropriate marketing strategy in selling their services to their customers. Providing quality online service to customers becomes even more challenging given today's sophisticated and demanding customers.

Because of the changing behavior of consumers due to the increasing use of e-banking services, it is necessary for banks to increase and improve the quality of online services to provide consumers satisfaction. Because of the complex, dynamic and competitive environment of banking along with the increasing demand of customers, the smallest difference in online services leads to the great industry transference (Beerli et al., 2005). But the main problem is that some of the customers are dissatisfied due to the quality of e-banking services (Ganguli & Roy (2010). This issue has produced a big challenge for bank managers to access customers' satisfaction and loyalty which is very important for firm performances (Hallowell 1996).

Because of the homogeneity trend of financial production and service, plus low switching cost, a customer can easily transfer from one e-banking to another. Given the fact that banks invest billions in the internet infrastructure, customer satisfaction and customer retention are increasingly developing into key success factors in e-banking (Bauer et al., 2002). This leads present Bank managers to take more challenges in making strategies in promoting and continuity to deal with e-banking to sustain with them.

As per Wungwanitchakorn (2002) - E-Banking services, in most developing countries, are still in its early stages. So, if banks are to obtain the benefits of E-banking, an identification of how the service is perceived by potential consumers and their characteristics as well as the factors affecting their level of satisfaction and continuity to deal with

such services is crucial. As Ribbink, et al. (2004)- identified the importance of electronic customer satisfaction when conducting business online and stated that satisfaction is likely to be even more important online as well as their continuation to deal with such services. Methlie and Nysveen (1999) suggested that banks should try to enhance customers' satisfaction with e-banking services, and this can be achieved by delivering high e-service quality. That is, delivering high e-quality services requires an understanding of the e-service quality dimensions, and trying to improve the quality of the services, so that customers' satisfaction is assured.

Interestingly, despite the importance and steady growth of e-banking services in Sri Lanka, scant research attention has been given to the key factors influencing customers' satisfaction and loyalty with e-banking services in Northern Province of SriLanka because of lack of examinations previously in this area. A study will employ survey data and conceptual model to recognize e-banking service quality dimensions and consumer attitudes that is evaluation of its effects on customers' satisfaction and loyalty toward e-banking.

OBJECTIVES

The preceding discussion provides a brief overview of E-banking and highlights the need to further understanding of this particular area of E-banking services in the context of e-customer satisfaction and continuity in dealing with such services leads e-loyalty. Therefore, the following research objectives are considered worthy of exploration:

- To identify the key dimensions related to E - Banking service qualities, e- customers' satisfaction and e-loyalty.
- To identify the interactions between e-banking service qualities, e-customer satisfaction.
- To identify the interactions between e-customer satisfaction and e-loyalty.
- To determine the moderating impact of the personal factors between e-banking service qualities, e-customer satisfaction, and e-loyalty.

LITERATURE REVIEW

According to Merrin, Hoffmann, & Pennings, (2013); O'Sullivan & McCallig,(2012), Jones (1996) - Even though customer satisfaction is good for firm growth, customer satisfaction alone is not enough; since it is possible for satisfied customers to defect. And also Kumar, Pozza, Petersen, & Shah, (2009); Yuen & Chan, (2012); Khan, (2012) explained that through customer satisfaction does not guarantee repurchase from a customer, it plays a very important role in achieving customer loyalty. Further Bain & Company,(2012) suggested that Loyal customers tend to buy more of the bank's product, stay with the bank longer, try new products, cost less to serve and urge others to become customers. And also as per Narteh & Kuada, (2014) - As competition becomes fiercer, tightening the bonds of loyalty with existing customers has become more important than ever.

Because of the changing behavior of consumers due to the increasing use of e-banking services, it is necessary for banks to increase and improve the quality of online services to provide consumers satisfaction. Because of the complex, dynamic and competitive environment of banking along with the increasing demand of customers, the smallest difference in online services leads to the great industry transference (Beerli et al., 2005). But the main problem is that some of the customers are dissatisfied due to the quality of e-banking services (Ganguli & Roy (2010). This issue has produced a big challenge for bank managers to access customers' satisfaction and loyalty, which is very important for firm performances (Hallowell 1996).

Because of the homogeneity trend of financial production and service, plus low switching cost, a customer can easily transfer from one e-banking to another. Given the fact that banks invest billions in the internet infrastructure, customer satisfaction, and customer retention are increasingly developing into key success factors in e-banking (Bauer et al., 2002). This leads present Bank managers to take more challenges in making strategies in promoting and continuity to deal with e-banking to sustain with them.

As per Wungwanitchakorn (2002) - E-Banking services, in most developing countries, are still in its early stages. Therefore, if banks are to obtain the benefits of E-banking, an identification of how the service is perceived by potential consumers and their characteristics as well as the factors affecting their level of satisfaction and continuity to deal with such services is crucial. As Ribbink, et al. (2004)- identified the importance of electronic customer satisfaction when conducting business online and stated that satisfaction is likely to be even more important online as well as their continuation to deal with such services. Methlie and Nysveen (1999) suggested that banks should try to enhance customers' satisfaction with e-banking services, and this can be achieved by delivering high e-service quality. That is, delivering high e-quality services requires an understanding of the e-service quality dimensions, and trying to improve the quality of the services, so that customers' satisfaction is assured.

Gaoand Owolabi (2008) found that female respondents are more likely to adopt Internet banking than males in Nigeria. Sohail and Shanmugham (2003) concluded that young and affluent people are more likely to use Internet banking services in Malaysia. Flavián et al. (2006) reported that in Chile, older and lower income groups are less likely to conduct their banking operations using the Internet. Stavins (2001) noted that white collar and married consumers adopt Internet banking more readily than other consumer groups. Polatoglu and Ekin (2001) reported that highly educated consumers are more likely to accept Internet banking. Gerrard et al. (2006) illustrate that less-educated people are less likely to use Internet banking. Any new technology is usually picked up by the early adopters who have Internet access and knowledge about the facilities such as those provided by a bank on the Internet (Prasad and Arumbaka, 2009). However, some consumers do not know how to become an Internet banking user, and some consumers do not have the required PC skills and facilities needed to do Internet banking (Prasad and Arumbaka, 2009). Kim, Widows, and Yilmazer (2005) noted that some consumers have more ability to use banking technology and computer software for managing money than other consumers. Consumers with increased computation ability may adopt Internet banking more easily and their ability may also improve their efficiency in the use of Internet banking. In addition, they may need to invest less time and money to learn Internet banking (Kim et al., 2005). Consumers who have no experience and skill in the use of banking technology and computer software may not recognize the benefits of Internet banking. However, these customers may hesitate to adopt Internet banking as they need to invest more time and money to learn Internet banking (Kim et al., 2005).

Further, Internet banking experience is an important factor that affects consumers' intentions to use Internet banking, and consumers' attitudes towards using the Internet banking system (Lichtenstein and Williamson, 2006). Jiang, Hsu, Klein, and Lin (2000) consider that the more experienced an Internet user is, the more likely they are to adopt new Internet technologies. Hoppe, Newman, and Mugeru (2001) reached the same conclusion and find that users who are more experienced at using the Internet are more likely to adopt the technology than those consumers who have not had much exposure to the internet. In addition, a simple lack of experience and knowledge can hold back adoption; firms and individuals with higher usage intensity of information technology may have a higher probability to adopt Internet banking than less experienced firms (Speece, 2000). Karjuoto et al. (2002) concluded that prior computer experience, prior technology experience, and prior personal banking experience positively affect consumers' attitude and behavior towards

online banking.

Hypotheses

H1: There is an impact on e-service quality dimensions on e-customer satisfaction.

H2: There is a relationship between e-customer satisfaction and e-loyalty.

H3: There is a significant relationship among e-banking service qualities, e-customer satisfaction, and e-loyalty.

H4: There is a moderating impact of customers' personal factors on the relationship among e-banking service Qualities, e-customer satisfaction, and e-loyalty.

Research Design & Sampling

The statistical population of this survey is all e-banking users in Northern Province of Sri Lanka that are estimated approximately about 200,000 users in initial estimation. According to the statistical population in this study, level of study and no difference among statistical population members, the random sampling method is used (Naser Asgari, Mohamad Hassan Ahmadi, Mehdi Shamlou, Atefe Rashid Farokhi & Milad Farzin(2014)). In a simple random sampling of the population, each element has an equal opportunity. In line with this, there are 7 commercial banks customers dealing with e-banking have been selected for this study such as Bank of Ceylon, Peoples Bank, Hatton National Bank, Commercial bank PLC, Sampath Bank, Union Bank, & Seylan Bank. According to this, 305 e-banking users in 7 selected commercial banks dealing with e-banking in Northern Province are selected as sample size. In this research questionnaire, a method is chosen as a data collection method. The questionnaire consisted of 11 questions, which measured the demographics for this study, and the remaining 55 questions were structured and measured by the 5 points Likert scale. The Likert scale consisted of questions which measured: 1 strongly disagrees, 2 disagree, 3 neutral, 4 agree and 5 strongly agree. To meet the purposes of this study, the following statistical techniques such as Descriptive Statistical Analysis & Structural Equation Modeling (SEM) by employing SmartPLS 3 are used. SEM has two parts: a measurement model and a structural model.

Assessment of Measurement Model

Prior to assessing the fit of the structural model, it is necessary to check the quality of the construct measurement. Under the Measurement Model Assessment In PLS-SEM, (also referred to as the outer model) includes composite reliability (CR) to evaluate internal consistency, individual indicator reliability and average variance extracted (AVE) to evaluate convergent validity (Hair, Hult, Ringle, & Sarstedt, 2013). This was done in the following ways.

Reflective measurement model should be assessed with the reliability and validity in order to achieve their consistency. Construct reliability can be classified as composite reliability. According to Zainudin Awang, (2012) explain reliability is the extent of how reliable is the said measurement model in measuring intended latent constructs. In other words, Reliability is the degree to which a set of indicators are internally consistent, the extent to which the instrument yields the same results on repeated trials. A measure of internal consistency or composite reliability is a composite alpha value. Construct reliability coefficients should all exceed the 0.70 lower limits (Hair et al., 1998; Rossiter, 2002). Raykov's reliability rho, also called reliability rho or composite reliability, tests if it may be assumed that a single common factor underlies a set of variables. Raykov (1998) has demonstrated that Cronbach's alpha may over- or under-estimate scale reliability. Underestimation is common. For this reason, rho is now preferred and may lead to higher estimates of true reliability. The acceptable cutoff for rho would be the same as the researcher sets for Cronbach's alpha since both attempts

to measure true reliability. Convergent Validity refers to the extent to which a measure correlates positively with alternative measures of the same variable (Hair et al., 2013). AVE was calculated to access convergent validity.

Table 1: Assessment of Measurement Model

	Cronbach's Alpha	Rho_A	Composite Reliability	Average Variance Extracted (AVE)
E-Banking service quality	0.863	0.875	0.898	0.597
E-Loyalty	0.865	0.865	0.937	0.881
E-customer satisfaction	0.844	0.844	0.928	0.865

This is the extent to which a variable is truly distinct from other variables, in terms of how much it correlates with other variables, and how much indicators represent only a single variable (Hair et al., 2013, p. 115). In other words, Discriminant validity indicates the extent of the given enabler is different from other enablers and two measures are used for assessing it i.e., Fornell–Larcker criterion and Cross loadings test (Hulland 1999).

The discriminant validity at construct level is assessed by Fornell & Larcker(1981) criterion and suggests that an enabler shares more variance with its assigned indicators than with any enablers. The AVE of each enabler should be greater than enabler's highest squared correlation with any other variable.

Table 2: Square Root of Average Variance Extracted (AVE)

	E-Banking Service Quality		E-Loyalty		E-Customer Satisfaction	
	Fornell-Larcker	HTMT	Fornell-Larcker	HTMT	Fornell-Larcker	HTMT
E-banking service quality	0.773					
E-loyalty	0.715	0.818	0.939			
E-customer satisfaction	0.767	0.893	0.723	0.845	0.930	

Table 3: The Results of Cross Loadings

	Outer Loadings Value	Outer Weights Value
Web design → E-Banking Service Quality	0.718	0.179
content → E-Banking Service Quality	0.858	0.232
e-convenience → E-Banking Service Quality	0.808	0.260
e-cost effectiveness → E-Banking Service Quality	0.660	0.182
e-response → E-Banking Service Quality	0.796	0.220
e-trust → E-Banking Service Quality	0.779	0.215
perceived quality → E-Customer Satisfaction	0.929	0.533
perceived usefulness → E-Customer Satisfaction	0.931	0.542
positive word of mouth → E-Loyalty	0.938	0.529
customer retention→ E-Loyalty	0.940	0.537

The table presented below is the discriminant validity according to PLS-SEM. According to Hamdan said et.al. (2011) explain that the discriminant validity test shows how much variance in the indicators that are able to explain variance in the construct. Discriminant validity value obtained from the square root of AVE value. The diagonal values (in bold) are the square root of AVE while other values are the correlation between the respective constructs. In this case, the discriminant validity is achieved when a diagonal value bold is higher than the value in its row and column for a good model.

Table 4: Correlation

	Content	Customer Retention	E-Convenience	E-Cost Effectiveness	E-Response	E-Trust	Perceived Quality	Perceived Usefulness	Positive Word Of Mouth	Web Design
Content	1.000									
Customer retention	0.576	1.000								
e-convenience	0.694	0.543	1.000							
e-cost effectiveness	0.566	0.444	0.534	1.000						
e-response	0.683	0.535	0.644	0.526	1.000					
e-trust	0.669	0.524	0.630	0.515	0.621	1.000				
Perceived quality	0.611	0.631	0.576	0.471	0.568	0.556	1.000			
Perceived usefulness	0.613	0.632	0.578	0.472	0.569	0.557	0.865	1.000		
Positive word of mouth	0.575	0.881	0.542	0.443	0.534	0.523	0.630	0.631	1.000	
Web design	0.616	0.483	0.580	0.474	0.572	0.560	0.512	0.513	0.482	1.000

Model Fit Indices

Before proceeding to test the model, first tested model fit by using three model fitting parameters: one is the Standardized Root Mean Square Residual (SRMR), second is the Normed Fit Index (NFI) and third the exact model fit (bootstrapped based statistical inference). The SRMR is defined as the difference between the observed correlation and the model implied correlation matrix whereby values less than 0.08 (Hu & Bentler, 1998) are considered a good fit. Henseler et al. (2014) introduced the SRMR as a goodness of fit measure for PLS-SEM that can be used to avoid model misspecification. The second fit index is the normed fit index (NFI) an incremental fit measure which computes the Chi-square value of the proposed model and compares it against a meaningful benchmark (Bentler & Bonett, 1980). NFI results in values between 0 and 1. The closer the NFI to 1 is the better the fit. NFI values above 0.9 usually represent acceptable fit. The third fit value is exact model fit which tests the statistical (bootstrap-based) inference of the discrepancy between the empirical covariance matrix and the covariance matrix implied by the composite factor model. Dijkstra and Henseler (2015a; 2015b) suggested the d_LS (i.e., the squared Euclidean distance) and d_G (i.e., the geodesic distance) as the two different ways to compute this discrepancy. A model fits well if the difference between the correlation matrix implied by the model being tested and the empirical correlation matrix is so small that it can be purely attributed to sampling error thus the difference between the correlation matrix implied by model and the empirical correlation matrix should be non-significant ($p > 0.05$). The bootstrap routine provides the confidence intervals of these discrepancy values. For the exact fit criteria (i.e., d_ULS and d_G), the upper bound of the confidence interval should be larger than the original value of the exact d_ULS and d_G fit criteria to indicate that the model has a “good fit”.

Chi² and Degrees of Freedom-Assuming a multinomial distribution, the Chi² value of a PLS path model with df degrees of freedom approximately is (N-1)*L, whereby N is the number of observations and L the maximum likelihood function as defined by Lohmöller (1989). The degrees of freedom (df) is defined as (K² + K) /2 – t, whereby K is the number of manifest variables in the PLS path model and t the number of independent variables to estimate the model implied covariance matrix. RMS_theta assesses the degree to which the outer model residuals correlate. The measure should be close to zero to indicate a good model fit because it would imply that the correlations between the outer model residuals are very small (close to zero).

Table 5: Model Fit Indices

	Value
SRMR	0.065
d_ ULS	0.235
d_ G1	0.205
d_ G2	0.179
Chi-Square	346.633
NFI	0.817
rms Theta	0.256

Assessment of Multi Collinearity

In structural models, it is essential to check whether any significant level of collinearity exists between predictor or explanatory variables. To check the collinearity the following sets of predictor constructs in the path model as shown in Table 7 run using Smart PLS3 by finding the formal detection tolerance and variance inflation factor (VIF). The tolerance levels below 0.10 and VIF of 10 and above indicates that there is multicollinearity problem (Henseler et al 2009).

Table 6: Inner and Outer VIF

	Outer VIF	Inner VIF		
		X	Y	Z
E-banking service quality (X)				
Web design	1.779		1.000	2.432
Content	2.740			
e-convenience	1.940			
e-cost effectiveness	1.430			
e-response	2.036			
e-trust	1.903			
E-customer satisfaction (Y)				2.432
Perceived quality	2.144			
Perceived usefulness	2.144			
E-loyalty (Z)				
Customer retention	2.382			
Positive word of mouth	2.382			

According to the Cronbach's Alpha is above 0.80 is showed that the e-banking service quality, e-customer satisfaction & e-loyalty are measured at an acceptable level for confirmatory research on a good scale. AVE may is used as a test of both convergent and divergent validity. AVE reflects the average communality for each latent factor in a reflective model. In an adequate model, AVE should be greater than .5 (Chin, 1998; Höck & Ringle, 2006: 15) as well as greater than the cross-loadings, which means factors should explain at least half the variance of their respective indicators. AVE below .50 means error variance exceeds explained variance, and lower than 1 for Fornell-Larcker Ratio is recommended (Bagozzi and Yi 1988). AVE is above 0.5 and as Fornell-Larcker Ratio is below 1. in this way, it has been satisfied with the convergent validity of the research model.

In a well-fitting model, HeteroTrait correlations should be smaller than MonoTrait correlations, meaning that the HTMT ratio should be below 1.0, Henseler, Ringle, & Sarstedt (2015: 121) suggest that if the HTMT value is below 0.90, discriminant validity has been established between a given pair of reflective constructs, so as the above Table 3 it was significant to model fit. For a well-fitting reflective model, path loadings should be above .70 (Henseler, Ringle, & Sarstedt, 2012: 269). Note that a loading of .70 is the level at which about half the variance in the indicator is explained by its factor and is the level at which explained variance must be greater than error variance. On the value 0.70 as a criterion for minimum measurement loadings, (Ringle, 2006). According to the above Table 4, value above approximately 0.70 for

factors contained shows that web design, content, e-trust, e-convenience, e-cost effectiveness & e-response are significantly correlated with e-banking service quality and perceived quality & perceived usefulness are also significantly correlated with e-customer satisfaction and also there is a significant correlation among customer retention and positive word of mouth & e-loyalty.

Outer model “weights,” in contrast to loadings, do not vary from 0 to plus or minus 1. Weights vary from 0 to an absolute maximum lower than 1. The more the indicators for a latent variable, are the lower the maximum and the lower the average outer model weight. It was also at significant in the above-mentioned Table 4.

The standardized root means square residual (SRMR) is a measure of approximate fit of the researcher’s model. It measures the difference between the observed correlation matrix and the model-implied correlation matrix. Put another way, the SRMR reflects the average magnitude of such differences, with lower SRMR being the better fit. By convention, a model has a good fit when SRMR is less than .08 (Hu & Bentler, 1998). According to the above Table 6, below 0.06 is fulfilled the criteria as well, and other model fit indices criteria are satisfied at significant for a good model.

A well-fitting measurement model should not display excessive multi-collinearity of indicator variables in the set for any given modeled factor according to Hair et al. (2014). In a well-fitting model, the structural VIF coefficients should not be higher than 4.0.

Assessment of Structural Model

After establishing the reliability and validity of the latent variables in the measurement model, it has been assessed the structural model (also referred to as the inner model) to test the relationship between endogenous and exogenous variables. Structural model assessment includes path coefficients to evaluate the significance and relevance of structural model relationships, R² value to evaluate the model’s predictive accuracy, Q² to evaluate the model’s predictive relevance and f² to evaluate the substantial impact of the exogenous variable on an endogenous variable (Hair et al., 2013).

The structural or inner model consists of the factors and the arrows that connect one factor to another. The loadings of the direct paths connecting factors are standardized regression coefficients. Appropriate model fit criteria are discussed in the sections below.

Assessment of Effects

Under partitioning direct, indirect, and total effects, the path multiplication rule may be used to estimate direct and indirect effects when, as in the model depicted above, one variable has a direct effect on another as well as in indirect effect. The direct effect is the standardized structural coefficient, also known as the inner model loading. The indirect effect is the product of the path coefficient. In more complex models there may be more than two paths multiplied together to get the indirect effect. The total effect is the sum of its direct and indirect effects.

Table 7: “Path Coefficients” are the Direct Effects which, when Added to the “Indirect Effects” Yield the “Total Effects”

	Total Indirect Effect	Specific Indirect Effect	Total Effects	Path Coefficient
E-Banking Service Quality → E-Customer Satisfaction			0.767	0.767
E-Banking Service Quality → E-Loyalty	0.324		0.715	0.391
E-Customer Satisfaction → E-Loyalty			0.423	0.423
E-Banking Service Quality → E-Customer Satisfaction → E-Loyalty		0.324		

Path Coefficients for Hypotheses Testing

A hypothesis is a formal tentative statement of the expected relationship between two or more variables under study and helps to translate the research problem & objectives into a clear explanation or prediction of the expected results or outcomes of the research study.

Table 8

Hypotheses		Original Sample (O)	Sample Mean (M)	Standard Deviation (Stdev)	T Statistics (O/Stdev)	P Values	Decision
H1	E-Banking Service Quality → E-Customer Satisfaction	0.767	0.768	0.027	28.693	0.000	Supported **
H2	E-Customer Satisfaction → E-Loyalty	0.423	0.419	0.073	5.788	0.000	Supported **
H3	E-Banking Service Quality → E-Customer Satisfaction → E-Loyalty	0.324	0.322	0.056	5.743	0.000	Supported **

Significant at p = < 0.10**

Assessment of Relative Correlations

Relative correlation- R² (Coefficient of determination) value is used to evaluate the structural model. This coefficient measures the predictive accuracy of the model and is calculated as the squared correlation between actual and predictive values of a specified endogenous construct. The R² values represent the exogenous variables’ combined effects on the endogenous latent variables and it also represents the amount of variance in the endogenous constructs explained by all of the exogenous constructs linked to it (Hair et al., 2013).

The Effect size (f²) is the measure of the impact of each predictor construct on the dependent construct. The effect of predictor independent construct is large at the structural level if f² is 0.35 and it is medium if f² is 0.15 and small if f² is 0.02 (Cohen 1988).

Table 9: Co-Efficient of Determination

	R Square (Co-Efficient Of Determination)		F Square (Effect Size)		
	R Square	R Square Adjusted	X	Y	Z
E-Banking service quality (X)				1.432	0.151
E- customer satisfaction (Y)	0.589	0.587			0.177
E-loyalty (Z)	0.585	0.582			

Assessment of Predictive Relevance

Model’s predictive relevance is the quality of partial least squares path model is evaluated by calculating Q2 statistics. Values Blindfolding was used to cross-validate the model’s predictive relevance for each of the individual endogenous variables, the Stone-Geisser Q2 value (Geisser, 1974; Stone, 1974). It is the capability of the model to predict by repeating the observed values by the model itself through blindfolding procedures (Tenenhaus et al 2005). Q2 greater than zero means the model has predictive relevance and less than zero means the model lacks predictive relevance. As a relative measure of predictive relevance, values of 0.02, 0.15, and 0.35 indicate that an exogenous construct has a small, medium, or large predictive relevance for a selected endogenous construct.

By using blindfolding procedures, two types of Q2 statistics can be estimated – Cross -validated communality (H2) and Cross -validated redundancy (F2). The cross-validated communality approach measures the capability of the model to predict the indicators directly from their enablers by cross -validation using the measurement model. The cross-validated redundancy approach uses the estimates of the path model to predict eliminated data points using both an inner structural model and outer measurement model. In the developed PLS Path model, Cross -validated redundancy approach is applied to predict the omitted data points.

Table 10

	Predictive Relevance Q2			
	Construct Cross Validated Redundancy	Construct Cross-Validated Communality	Indicator Cross-Validated Redundancy	Indicator Cross-Validated Communality
E-Banking Service Quality		0.431		
Web design				0.375
Content				0.570
e-convenience				0.454
e-cost effectiveness				0.282
e-response				0.464
e-trust				0.438
E-customer satisfaction	0.486	0.462		
perceived quality			0.519	0.463
perceived usefulness			0.454	0.460
E-Loyalty	0.491	0.491		
customer retention			0.497	0.490
positive word of mouth			0.485	0.492

According to the above table shows the corresponding Smart PLS 3 output. “Path Coefficients” are the direct effects which, when added to the “Indirect Effects” yield the “Total Effects”. Partitioning the effects shows that E-Banking Service Quality and E-Customer Satisfaction have a considerable positive total absolute effect on E- Loyalty.

To test the research hypotheses and investigate the interactions among e-service quality, e-customer satisfaction, and e-loyalty, the researcher conducted “Path Coefficients” by using Smart PLS 3. The final structural model of interactions of the above factors on e-banking service was tested. The results showed that e-service quality has a positive interaction with e-customer satisfaction (H1), and there is a positive interaction between e-customer satisfaction and e-loyalty (H2). Further e-service quality indirectly interacts the e-loyalty through the level of e-customer satisfaction (H3). Therefore research hypotheses 1, 2, &3 were supported with strong statistical significant.

The R-square values are shown inside the blue ellipses for endogenous latent variables (factors). This is the most common effect size measure in path models, carrying an interpretation e-loyalty is an endogenous variable (one with incoming arrows). For the endogenous variable e-loyalty, the R-square value is 0.585, meaning that about 59% of the variance in e-loyalty is explained by the model that is, jointly by e-banking service quality and e-customer satisfaction, and also the R-square value of 0.589 indicates that about 59% of the variance in e-customer satisfaction is because of e-banking service quality factors.

Chin (1998), Hock & Ringle (2006) describes results above the cutoffs 0.67, 0.33 and 0.19 to be “substantial”, “moderate” and “weak” respectively. The R-square here would be considered to be of moderate strength or effect among e-banking service quality, e-customer satisfaction & e-loyalty and also between the e-banking service quality and e-customer satisfaction.

Following Cohen (1988),.02 represents a “small” f^2 effect size,.15 represents a “medium” effect, and.35 represents a “high” effect size. According to the above Table 10, it indicates that the effect of dropping between e-banking service quality and e-customer satisfaction is from the model is high and also among e-banking service quality, e-customer satisfaction and e-loyalty is about medium size effect.

Construct cross-validated redundancy will usually be the blindfolding output of greatest interest since it speaks to the model fit of the PLS latent variable model. In SmartPLS 3 output, Stone-Geisser Q2 appears as “1 – SSE/SSO” in the Total” table of the “Construct Cross-validated Redundancy” section, as in the table above. According to that Q2 is approximately 0.49. Following Cohen (1988),.02 represents a “small” effect size,.15 represents a “medium” effect size, and.35 represents a “high” effect size. On this basis, it can be said that the model has a high degree of predictive relevance with regard to the endogenous factors e-customer satisfaction and e-loyalty.

Further, the inner model has a high degree of predictive relevance with regard to the endogenous factors e-customer satisfaction and e-loyalty by either the redundancy or communality method and for the outer model connecting latent constructs to their indicators shows that here also, outer model has a high degree of predictive relevance with regard to the endogenous factors e-customer satisfaction and e-loyalty by either the redundancy or communality method than the e-cost effectiveness with medium predictive relevance to them.

Multi- Group Analysis (MGA)

PLS multi-group analysis is used to determine if the PLS model significantly differs between groups. In which the researcher seeks to determine if the model is the same or different between groups based on gender, age, education, personal experience & knowledge in order to test H4. The difference among groups’ path coefficients is subject to three tests. These significance tests by default use the .05 significance level. The three methods of testing the significance of path differences are:

- **PLS-MGA:** This non-parametric significance test finds a difference to be significant if the p-value is smaller than 0.05 or larger than 0.95 for the difference of group-specific path coefficients. This method (Henseler et al., 2009) is an extension of the original nonparametric Henseler's MGA method as described by Sarstedt et al., 2011, and is the most commonly used test.
- **Parametric Test:** This is a similar method but is parametric, assuming that groups have equal variances.

- **Welch-Satterthwait Test:** This is an alternative parametric test, assuming unequal variances between groups.

According to the above, results have been displaced by using the following tables.

CONCLUSIONS

Present study tried to propose the modified version of the e-SERVQUAL instrument for online banking by using confirmatory factor analysis. The main purpose of this study is to gain the better understanding of interactions among e-service quality, e-customer satisfaction & e-loyalty in relating to online banking concept within the specific research means by answering research questions by the way of suggesting the modified model regardless the applied banking technology therefore, it is considered a general model which is applied to any kind of banking technology. In this way, this study tried to suggest the six-factor model of e-banking service quality including website design, content, e-trust, e-convenience, e-cost effectiveness & e-response/support and suggesting the interactions among those with e-customer satisfaction and e-loyalty.

According to this study the first hypothesis is confirmed and it is consistent with the study of Zavareh et al, Fasanghari, Roudsari (2008), Gbadeyan, Akinyosoye-Gbonda (2011), Jayanthi, Umarani (2012), Kumbhar (2011) as suggesting that the assessment the use of e-SERVQUAL scale to construct the e-service quality for internet banking services and revealed the significant positive relationship between e-banking service quality and e-customer satisfaction in internet /online banking area. And the study of Sakhaei et al., Anuar MM, Adam F, Mohammad Z (2012) is also confirmed as suggesting the meaningful relationship of key factors of e-service quality on e-customer satisfaction regarding online banking concept by yielded a significant prediction model mentioned in figure 7.

The study of Bearden and Teel, (1983); Cronin and Taylor, (1992); Carunana, (2002); Dick and Basu, (1994); Oliva et al., (1992); Selnes, (1993), Park & Kim, (2003); Reichheld & Schefer, (2000); Yang & Peterson, (2004) are also supported to this study for the consistent with the concept of interaction between e-customer satisfaction and e-loyalty on online banking area by confirming H2, and H3 is consistent to the study of Ariff et al., and is supported from Caruana, A., & Malta, M (2002) by revealing that e-service quality has both direct and indirect effects on e-loyalty through customer satisfaction.

Finally, this study is also tried to analyze the influence of personal factors in dealing with online banking area. Previous studies relating to Age, (Zeithaml and Gilly, 1987; Trocchia and Janda, 2000; Karjaluoto, 2002; Lee, 2002) suggesting as Younger persons are being more likely to adopt internet banking which has also linked age and adoption of technologies, Times (1996) and Kerem (2002) indicating as Internet users tend to be young adult and they would be very much attracted to utilize innovative banking services and Al-Jamal & Abu-Shanab (2015) finding as Age is a significant predictor of the intention to use technology is confirmed through Multi-Group analysis.

When considering the Gender, the study of Parasuraman and Igarria (1990), Njuguna PK, Ritho C, Olweny T, Wanderi PM (2012) is confirmed as no difference is accounted for gender on online banking service. In the context of education level the previous researches are done by Redlinghuis A, Rensleigh C (2010), Saeidipour [(2013), Porter and Donthu (2006), (Nasri, 2011), Izogo et al (2012) are confirmed as considered as moderating factor in dealing with online banking services. Further, this study is consistent with research findings of Lichtenstein and Williamson, (2006) by suggesting Internet banking experience is an important factor that affects consumers' intentions to use Internet banking, and consumers' attitudes towards using the Internet banking system. According to this, H4 that is there is the moderating

impact of customer personal factors on the relationship among e-service quality, e-customer satisfaction, and e-loyalty are confirmed.

Even though this study has provided valuable insight into a somewhat scant area of this study, the followings are considered as limitations. The basic limitation of this study is that it only considers customers perspective of e-banking and it does not take into consideration what perspective do all bankers employees have on the technology. It does not include bank customers who do not use the current e-banking which would help to compare the attitude of e-banking users and nonusers towards e-banking. It is also limited to banks customers only that started e-banking service it doesn't fully cover those which do not start it. Further most available data of previous research conducted may not explain specifically to our country in this context of these areas. Finally, this study is further limited to the Northern Province of Sri Lanka due to the time and cost limitation

Theoretically, this study extends the knowledge body and enriching the existing theories of e-service quality mostly applicable as key determinants for the interactions between e-customer satisfaction & e-loyalty in the online banking area. In addition, methodologically this study attempted to examine the suitability of SERVQUAL to measure the service quality in the online banking concept. The assessment of reliability and validity of SERVQUAL through Smart PLS 3 analysis confirmed the correspondence rules between the empirical and theoretical concepts. These methodological attempts and purified measurement items of the study will provide a valuable guidance for the future study relating to online banking concept.

Future research is therefore required to extend these results in other geographical areas and other online service quality dimensional factors for e-satisfaction and e-loyalty in order to validate the model and finding for generalization of this study. And future research should investigate whether the model could be used for a comparative study between the service sectors and the industrial sector, testing for difference and effects of electronic functionality factors in both sectors. By doing this, it would be interesting to test whether the model would hold across a range of industries and service sectors apart from the banking industry and by the way to facilitate drawing appropriate and innovative managerial decision making under a severe competitive environment.

REFERENCES

1. Abbas Keramati, Alireza Nili (2011), *A Proposal Framework for investigating the impact of customer relationship management on customer retention in e-commerce*, *Proceedings of the 2011 International Conference on Industrial Engineering and Operations Management, Kuala Lumpur, Malaysia, January 22 – 24, 2011*
2. Ali Naghi Mansour Beigi1, Saeid Jorfi, Reza Salemi Tajarrood, Hamed Mansour Beigi(2016), *The Study of the Effects of E-banking Services Quality on Customers' Satisfaction and Loyalty (Case Study: Agricultural Bank of Khuzestan Province)*, *JOURNAL OF CURRENT RESEARCH IN SCIENCE ISSN 2322-5009 CODEN (USA): JCRSDJ, www.jcrs010.com*
3. Ali Rfieda, Mira Kartiwi(2013), *Investigating Factors that affecting the Continued use of Internet Banking: Case Study of Libya*, *Information Management and Business Review Vol. 5, No. 7, pp. 313-323, July 2013 (ISSN 2220-3796)*

4. Amin Mojoodi, Nadereh Sadat Najafizadeh, Paria Ghasemi (2013), *Service Quality Dimensions in Technology-Based Banking: Impact on customer satisfaction and loyalty*, *AENSI Journals Advances in Environmental Biology*, *Advances in Environmental Biology*, 7(11) Oct 2013, Pages: 3205-3215
5. Bahareh Moradi Aliabadi, Babak Jamshidinavid, Farshid Namamian (2013), *Design and explain the factors affecting customer loyalty in online banking*, *International Research Journal of Applied and Basic Sciences*, ISSN 2251-838X / Vol, 4 (9): 2782-2791, Science Explorer Publications
6. Fakhreddin Maroofi (2013), *Factors Affecting Customer Loyalty of Using Internet Banking in Iran*, *World Applied Sciences Journal* 28 (11): 1685-1693, 2013, ISSN 1818-4952 © IDOSI Publications
7. Gaurang Trivedi, Richard Remedios (2014), *Internet banking & customer retention-a study on the impact of internet banking on customer retention of HDFC Bank*, *GALAXY International Interdisciplinary Research Journal*, ISSN 2347-6915, GIIRJ, Vol.2 (2), February (2014) 218
8. Anusha Punia & Sudershan Mehta, *E-Banking: Awareness, Perception, Utilisation & Constraints*, *IMPACT : International Journal of Research in Applied, Natural and Social Sciences (IMPACT : IJRANSS)*, Volume 4, Issue 9, September 2016, pp. 207-216
9. Geeta Sharma, Mr. Surendra Malviya (2014) *Internet Banking Service Quality and Its Impact On Customer Satisfaction In Indore District Of Madhya Pradesh*, *International Institute of Professional Studies, Devi Ahilya University, Indore, India* 452017, *International Journal of Business and Management Invention* ISSN (Online): 2319 – 8028, ISSN (Print): 2319 – 801X www.ijbmi.org Volume 3 Issue 3 March. 2014 PP.01-06
10. Gong Jing Yoo & In Seon (2013), *An Empirical study on the Effect of E-Service Quality to Satisfaction*, *International Journal of Management Sciences and Business Research*, 2013 ISSN (2226-8235) Vol-2, Issue 10:
11. Hitesh Kapoor (2015), *Customer Satisfaction and E – Banking services: a Case Study of Tricity*, *International Journal of Innovative Research in Science, Engineering and Technology*, (An ISO 3297: 2007 Certified Organization), Vol. 4, Issue 10, October 2015
12. Jannatul Mawa Nupur (2010), *E-Banking and Customers' Satisfaction in Bangladesh: An Analysis*, *International Review of Business Research Papers* Volume 6. Number 4. September 2010. Pp. 145 - 156
13. Kalpana Devi S.B. Revathy (2011), *Customers' satisfaction with service quality of internet banking*, *international journal of business policy and economics*, Vol. 4, No. 1, (2011) : 161-176
14. Kampakaki, Maria and Papathanasiou, Spyros (2016), *Electronic – Banking and Customer Satisfaction in Greece. The Case of Piraeus Bank (December 1, 2016)*. *Annals of Management Science* Vol. 5, No. 1, 55-68.
15. Mahmud Jasim Alsamydai, Dr. Rudaina Othman Yousif & Mohammad Hamdi Al Khasawneh (2012), *The Factors Influencing Consumers' Satisfaction and Continuity to Deal With E-Banking Services in Jordan*, *Global journal of management and business research* Volume 12 Issue 14 Version 1.0 Year 2012, Double Blind Peer Reviewed *International Research Journal*, Publisher: Global Journals Inc. (USA) Online ISSN: & Print ISSN

16. Malikeh Beheshtifar and Nad Ali Rezapour Anari Nezhad(2015), *Impact of electronic banking on customer loyalty, Department of Management, Rafsanjan Branch, Islamic Azad University, Iran, Indian Journal of Fundamental and Applied Life Sciences ISSN: 2231– 6345, Vol.5 (S1), pp. 194-199/Beheshtifar and Nezhad Research Article, Centre for Info Bio Technology (CIBTech) 194*
17. Naser Asgari, Mohamad Hassan Ahmadi, Mehdi Shamlou, Atefe Rashid Farokhi & Milad Farzin(2014), *Studying the Impact of E-Service Quality on E-Loyalty of Customers in the Area of E-Banking Services, Journal of Management and Sustainability; Vol. 4, No. 2; 2014ISSN 1925-4725 E-ISSN 1925-4733Published by Canadian Center of Science and Education, URL: <http://dx.doi.org/10.5539/jms.v4n2p126>.*
18. Navneet Kaur¹ and Ravi Kiran (2014), *Customer Satisfaction and Customer Loyalty in E-Banking in India: The Intricacies of Relationship, IOSR Journal of Business and Management (IOSR-JBM) e-ISSN: 2278-487X, p-ISSN: 2319-7668. Volume 16, Issue 9.Ver. VI (Sep. 2014), PP 06-13*
19. Rangsan.Nochai and Titida. Nochai (2013),*The Impact of Internet Banking Service on Customer Satisfaction in Thailand: A Case Study in Bangkok, International Journal of Humanities and Management Sciences (IJHMS) Volume 1, Issue 1 (2013) ISSN 2320–4044 (Online)*
20. Sadaf Firdous, Rahela Farooqi(2017),*Impact of internet banking service quality on customer satisfaction, Journal of Internet Banking and Commerce, April 2017, vol. 22, no. 1, (<http://www.icommercecentral.com>)*
21. Sajjad Abbas(2015), *Internet Banking Service Quality and Its Impact Upon Customer Satisfaction in Pakistan, International Review of Basic and Applied Sciences Vol. 3 Issue.7*
22. Seyed Fathollah Amiri Aghdaie¹, Raziieh Karimi¹ & Ali Abasaltian(2015), *The Evaluation of Effect Electronic Banking in Customer Satisfaction and Loyalty, International Journal of Marketing Studies; Vol. 7, No. 2; 2015,ISSN 1918-719X E-ISSN 1918-7203,Published by Canadian Center of Science and Education90*
23. Shahrzad Shahriari(2014), *Effective Factors on Loyalty of E-Banking Customers,International Journal of Advance Research in Computer Science and Management Studies, ISSN: 2321-7782 (Online),Volume 2, Issue 3, March 2014*
24. Sulieman Ibraheem Shelash,Al-Hawary Ahlam Jebreen Ahmad Hussien(2017),*The Impact of Electronic Banking Services on the Customers Loyalty of Commercial Banks in Jordan, International Journal of Academic Research in Accounting, Finance and Management Sciences Vol. 7 (1), pp. 50–63.*
25. Tasmin. R, Alhaji Abubakar Aliyu and Josu Takala(2012), *A Review of the Influence of Electronic Banking Services on Customer Service Delivery: Successes and Challenges, Australian Journal of Basic and Applied Sciences, 6(13): 80-85, 2012 ISSN 1991-8178*
26. Thanh Nguyen, Mohini Singh(2004), *Impact of Internet Banking on Customer Satisfaction and Loyalty:A Conceptual Model, The Fourth International Conference on Electronic Business (ICEB2004) / Beijing*
27. Vadivelu Tharanikaran, Sutha Sritharan, Vadivelu Thusyanthy(2017), *Service Quality and Customer Satisfaction in the Electronic Banking, International Journal of Business and Management ISSN 1833-8119 (online)*

28. Worku, Tilahun and Tafa (2016), *The Impact of Electronic Banking on Customers ' Satisfaction in Ethiopian Banking Industry (The Case of Customers of Dashen and Wogagen Banks in Gondar City)*, *Journal of Business & Financial Affairs*, ISSN: 2167-0234, Worku et al., *J Bus Fin Aff* 2016, 5:2, DOI: 10.4172/2167-0234.1000174

