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Investigating the role of UTAUT and e-service quality in internet banking adoption setting

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Investigating
the role of
UTAUT
and E-SQ

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Abstract

Purpose – Technology adoption is a great challenge in the banking sector of Pakistan. A recent report issued by state bank of Pakistan revealed that there is a squeak growth, only 3 percent, in internet banking adoption. In order to effectively delve into the issue of internet banking adoption, the purpose of this paper is to use unified theory of acceptance and use of technology factors, namely performance expectancy and effort expectancy and e-service quality (E-SQ), as theoretical lens for this study.

Design/methodology/approach – The research model was empirically tested using 398 valid responses from customers of commercial banks in Pakistan. The theoretical model was tested using structural equation modeling.

Findings – Findings indicate that performance expectancy, effort expectancy, website design, customer service, assurance and reliability have direct influence on user intention to adopt internet banking. Results revealed that approximately 79 percent of variance in user intention to adopt internet banking was explained by predictors. In addition, the mediating role of performance expectancy and effort expectancy among website design, customer service and user intention was also confirmed.

Practical implications – For researchers, this study provides a base of integrated technology model and it suggests using this model in other online domains such as mobile payment and online web-shopping for further refinement. For policymakers, understanding the key constructs is important to design, refine and implement new internet banking website that, in turn, will boost internet banking adoption trend among users of commercial banks.

Originality/value – This paper makes a unique contribution toward information system and services marketing literature. The study schematized that website design, customer service, assurance and reliability are the key dimensions of E-SQ and significantly influence the user intention to adopt internet banking.

Keywords Performance expectancy, e-Service quality, Effort expectancy, Structural equation modelling (SEM)

Paper type Research paper

1. Introduction

Internet banking has appeared as one of the most profitable e-commerce application (Wang *et al.*, 2017). Several banks have offered internet banking system in an attempt to reduce cost while improving customer services (Xue *et al.*, 2011). Therefore, banks are still finding difficulties in fully maximizing their operations, thereby attributing to customer's unwillingness to adopt internet banking irrespective of the benefits (Martins *et al.*, 2014; Rahi and Ghani, 2016a, b). Banks are trying to discover new ways to dematerialize customers relationship with physical banking system (Narteh, 2013; Samar, Norjaya, and Feras, 2017). The adoption of internet banking services will not be only beneficial for banks but it will also give an opportunity to banks to satisfy their customers from a distance (Frye and Dornisch, 2010; Martins *et al.*, 2014; Rahi, 2016a; Shahzad *et al.*, 2017). Thus, understanding the reason for this resistance will be useful for policymakers in formulating new strategies aimed at increasing internet banking use.



Several studies have investigated technology adoption issues in online retailing using unified theory of acceptance and use of technology (UTAUT) model (Al-Qeisi *et al.*, 2014; Chiu and Wang, 2008; Marchewka *et al.*, 2007; Oliveira *et al.*, 2016). Therefore, little research has been done with an integrated UTAUT model. Previously, researchers have focused either on IT-related factors or service quality elements in order to investigate internet banking adoption issues (Ismail Hussien and Abd El Aziz, 2013). However, this study integrates the UTAUT model and e-service quality (E-SQ) together to investigate the user's behavior toward adoption of internet banking in Pakistan. According to Oliveira *et al.* (2016), an integrative model reinforces the significance and predictability of the results. Hence, the present study introduced an integrative model that combined the key factors of UTAUT (i.e., performance expectancy, effort expectancy and behavioral intention) and E-SQ dimensions (i.e., customer service, website design, assurance and reliability) in order to get deep insight of internet banking adoption issues in Pakistan. The research gives an opportunity to practitioners for the better understanding of user's behavior toward adoption of technology, especially in emerging e-payment domain.

2. Literature review

2.1 Background of technology adoption models

Internet banking has received colossal attention in technology adoption research. The banking sector has been using information system (IS) not only for internal business activities but also to provide convenient banking services to customers (Rahi and Ghani, 2016b). The most well-known theoretical models that had sought to investigate technology adoption issues are: motivational model by Davis *et al.* (1992), theory of planned behavior (TPB), a hybrid model that combines constructs of TAM and TPB by Taylor and Todd (1995), model of PC utilization by, innovation diffusion theory by Moore and Benbasat (1996), and lastly social cognitive theory by D.R. Compeau and Higgins (1995), Thompson *et al.* (1991). These models have evolved in technology adoption studies over the years and developed as a result of persistent efforts. Therefore, the present study integrates unified theory of acceptance and the use of technology and E-SQ in order to understand the factors that influence user intention to adopt internet banking in Pakistan.

2.2 Unified theory of acceptance and use of technology (UTAUT)

Venkatesh *et al.* (2003) noticed that researchers were confronted with a choice among a multitude of technology models. They realized the need for a synthesis in order to achieve a unified view of technology adoption models. Thus, Venkatesh *et al.* (2003) introduced a new model unified theory of acceptance and the use of technology containing eight core factors, namely, performance expectancy, effort expectancy, social influence and facilitating condition, that have a significant influence on user intention. Performance expectancy is the degree wherein an individual believes that using the system will help him/her to attain gains in job performance (Venkatesh *et al.*, 2003). Therefore, effort expectancy is explained as the degree of ease associated with the use of the system (Venkatesh *et al.*, 2003). Several researchers have investigated technology adoption issues in online retailing using UTAUT model (Chiu and Wang, 2008; Marchewka *et al.*, 2007; Rahi, Ghani, Alnaser and Ngah, 2018; Rahi, Ghani and Ngah, 2018). Therefore, less has been noticed about integration of information technology models that combine social psychological factors (service quality) and technology-related constructs (performance expectancy and effort expectancy).

2.3 e-Service quality (E-SQ)

E-SQ is getting importance not only in evaluating business success or failure but also in determining consumer experiences in an interactive online environment (Rahi and Ghani, 2018b). According to Santos (2003), E-SQ is a virtual marketplace where customer can evaluate,

judge and compare the excellence of e-service delivery. Several researchers agreed on four core dimensions of E-SQ required in an online environment, which include: customer service, website design, assurance and reliability (Blut, 2016; Cristobal *et al.*, 2007; Ho and Lin, 2010; Parasuraman *et al.*, 2005; Rahi, 2018b; Rahi and Ghani, 2018a; Wolfenbarger and Gilly, 2003). Customer service refers to helpful and responsive service that responds to customer inquiries and addresses returns/complaints quickly during or after the sale (Blut, 2016). Website design refers to all elements of the consumer's experience related to the website (except customer service), including navigation, information search, order processing, shipment tracking, product availability, product and price offering, personalization and system availability (Blut, 2016). Therefore, assurance is defined as the security of credit card payments and privacy of shared information during or after the sale Blut (2016) and finally reliability is referred to those activities that ensure that the customers receive what they ordered based on the display and description provided on the website and/or the delivery of the right product at the right price (i.e., billed correctly) in good condition within the time frame promised (Blut, 2016).

3. Research hypothesis

3.1 Theories integration rational

The proposed model combined the key factors of UTAUT model and E-SQ dimensions for the understanding of internet banking adoption trend. According to Rahi, Ghani and Ngah (2018), consumer acceptance of new technology is a complicated phenomenon that requires more than a single model. Similarly, Jackson *et al.* (2013) postulated that an integrative perspective model provides a more complete account of the causal mechanisms underlying the relationships as well as unique insights that cannot be obtained with a single-theory-driven model. After reviewing above arguments, it can be assumed that the integration of the website design, customer service, assurance and reliability with performance expectancy and effort expectancy will provide a broader picture of technology adoption issues of the banking sector. The following section describes scientific linkage among factors proposed for the new research model.

3.2 Unified theory of acceptance and use of technology (UTAUT)

Performance expectancy in the internet banking context is defined as the degree where an individual believes that using of internet banking will help him/her to attain gains in performing banking tasks (Rahi, Ghani, Alnaser and Ngah, 2018). Morosan and DeFranco (2016) revealed that performance expectancy has a significant effect on behavioral intention to adopt online banking. Several other researchers have provided evidence of significant influence of performance expectancy on behavioral intention to adopt internet banking, (AbuShanab *et al.*, 2010; Foon and Fah, 2011; Khalil *et al.*, 2010; Martins *et al.*, 2014; Oliveira *et al.*, 2016). Therefore, we derive the following hypothesis:

H1. Performance expectancy has a positive influence on customer's intention to adopt internet banking.

Effort expectancy is the degree when users feel that internet banking is easy to use and does not require much effort, they would have high chances to adopt internet banking. Individuals who believe that online banking is effortless are likely to adopt it (Chaouali *et al.*, 2016). Past studies have indicated that effort expectancy has significant influence on behavioral intention to adopt internet banking (Martins *et al.*, 2014; Rahi, Ghani and Ngah, 2018; Riffai *et al.*, 2012). We, therefore, hypothesized that:

H2. Effort expectancy has a positive influence on customer's intention to adopt internet banking.

According to Venkatesh *et al.* (2003), when users feel that technology is easy to use and does not require much effort, they have a higher expectation toward acquiring the desired

performance. Miltgen *et al.* (2013) stated that effort expectancy contributes to acquire desired performance expectancy. Earlier studies have indicated that effort expectancy has a significant influence on performance expectancy (Al-Qeisi *et al.*, 2014; Oliveira *et al.*, 2016). Thus, we feel confident in theorizing a causal link between effort expectancy and performance expectancy:

- H3. Effort expectancy has a positive influence on performance expectancy of internet banking users.

3.3 e-Service quality (E-SQ)

Assurance refers to customer's concern regarding potential security/privacy lapses (Blut, 2016). In an online environment, consumers can compare product prices efficiently; however, confidentiality and safety may be serious issues (Santos, 2003). Assurance is an important attributes of online transaction and it affects overall assessment of online buying process (Blut, 2016). Several studies have indicated that during online transaction, assurance significantly influences user intention (Ben Mansour, 2016; Giovanis *et al.*, 2012; Holloway and Beatty, 2008). Hence, we derive the following hypothesis:

- H4. Assurance has a positive influence on customer's intention to adopt internet banking.

Reliability refers to the possibility of modifying or postponing the purchase process at any given moment with no obligation and obtaining information on product availability at the moment of purchase (Cristobal *et al.*, 2007). The accuracy of order fulfillment, order timing and condition of the delivered products are the main attributes of reliable services (Bauer *et al.*, 2006). According to Blut (2016), in online buying, delivery timeliness, order accuracy and delivery condition are the most important attributes of E-SQ and they significantly influence user behavioral intention. Thus, assurance is hypothesized as:

- H5. Reliability has a positive influence on customer's intention to adopt internet banking.

Customer service contributes to overall quality assessments when customers form their judgments toward online website (Rahi, 2016a; Rahi, Ghani and Muhamad, 2017; Rahi and Ghani, 2016a, b; Samar, Norjaya and Feras, 2017; Samar, Ghani and Alnaser, 2017). According to Ho and Lin (2010), customers expect to complete transaction correctly, to receive personalized attention, to have product delivered on time and to have their e-mails answered quickly. Customer service has proved a key element for achieving good website performance results in an online shopping. Past studies have indicated that customer service has a significant influence on user's effort expectancy toward the use of internet banking (Al-Qeisi *et al.*, 2014; Swaid and Wigand, 2007; Wang *et al.*, 2017). Similarly, customer service is found to have a significant influence on user's intention to adopt internet banking (Blut, 2016; Cristobal *et al.*, 2007; Ho and Lin, 2010; Parasuraman *et al.*, 2005; Swaid and Wigand, 2007; Zeithaml, 2002). We, therefore, derive the following hypothesis:

- H6. Customer service has a positive influence on performance expectancy of internet banking users.

- H7. Customer service has a positive influence on effort expectancy of internet banking users.

- H8. Customer service has a positive influence on intention to adopt internet banking.

Quality information on website has found a significant influence on user's intention to buy a product (Al-Qeisi *et al.*, 2014; Holloway and Beatty, 2008; Udo *et al.*, 2010). According to Holloway and Beatty (2008), attributes related to websites bring easiness and would increase the performance expectancy of the customers during online buying process. In previous studies, website design has significantly influenced user's performance expectancy

(Al-Qeisi *et al.*, 2014; Bashir and Madhavaiah, 2015). Therefore, we hypothesized website design as:

H9. Website design has a positive influence on performance expectancy.

H10. Website design has a positive influence on effort expectancy.

H11. Website design has a positive influence on the intention to adopt internet banking.

Past studies have indicated that effort expectancy significantly influenced performance expectancy (Al-Qeisi *et al.*, 2014; Oliveira *et al.*, 2016). Therefore, literature on effort expectancy and performance expectancy tends to have been silent when addressing the mediating role of these factors. Thus, the present study investigates the mediating role of performance expectancy and effort expectancy among website design, customer service and behavioral intention to adopt internet banking. According to Miltgen *et al.* (2013), effort expectancy contributes to acquire desired performance expectancy. Earlier studies have revealed significant relationship between customer service and website performance (Al-Qeisi *et al.*, 2014; Cristobal *et al.*, 2007; Ho and Lin, 2010; Wang *et al.*, 2017; Zeithaml, 2002). Furthermore, Holloway and Beatty (2008) stated that attributes related to websites brought easiness and increased the performance expectancy. Therefore, with the support of existing studies (Al-Qeisi *et al.*, 2014; Cristobal *et al.*, 2007; Ho and Lin, 2010; Wang *et al.*, 2017; Zeithaml, 2002), we hypothesized that:

H12. The relationship between website design and performance expectancy is positively mediated by effort expectancy.

H13. The relationship between customer service and performance expectancy is positively mediated by effort expectancy.

H14. The relationship between effort expectancy and intention to adopt internet banking is positively mediated by performance expectancy.

4. Research methods

4.1 Instrument development

In order to test the conceptual model, a questionnaire was developed using constructs and items from literature. Measurement items for performance expectancy and effort expectancy were adapted from Venkatesh *et al.* (2003) and Rahi, Ghani, Alnaser and Ngah (2018). Six items for customer service were adapted from Rahi, Ghani and Alnaser (2017) and three items each for website design and assurance were adapted from Ho and Lin (2010). Three items of reliability were adapted from Wolfinbarger and Gilly (2003). We also added demographic variables such as age, gender and respondents' education and measured them with a nominal scale. Therefore, constructs items were measured using seven-point Likert scales, ranging from strongly disagree (1) to strongly agree (7).

4.2 Data and sample

First, a pilot survey was conducted in Pakistan with 100 respondents in order to refine the questions. The most important change was in customer service construct wherein the loading of item CS5 was less than 0.5 and it was excluded from the main survey in order to achieve AVE (Rahi, 2017a, b). For the main survey, the sample size was estimated as suggested by Joseph F. Hair (2007). Keeping in view the guidelines, the research required a factor analysis procedure in order to determine the dimensionality for the employed items; the sample size to be obtained should be five times greater (minimum) or ten times greater (maximum) than the items that are to be analyzed Joseph F. Hair (2007). The respondents

engaged in this study were sampled using convenience sampling and in line with Rahi (2017a, b) and Rowley (2014).

A total of 750 banking customers were approached in which 415 respondents filled the questionnaire with a response rate of 55 percent. Among 415 responses, 17 were discarded based on two criteria: the respondents did not fill all the questions, the questionnaire contained non-serious answers. For instance, although respondents answered all the questions, if the answer indicated only same answer from beginning to end, the questionnaire were considered as non-serious answers (Rahi, 2018a; Rowley, 2014). Thus, finally, 398 valid questionnaires with a response rate of 53 percent were used for structural equation modeling (SEM). The majority of the respondents (58.5 percent) were females, while 41.5 percent were males. With regard to age, findings revealed that young banking customers were more inclined toward the adoption of internet banking. Similarly, most of the participants (49.7 percent) had graduate-level qualification followed by those who had post-graduate qualification (30.4 percent). The common method bias was examined using Harman's single factor test (Podsakoff *et al.*, 2003). Therefore, no significant common method bias was found, as the maximum co-variance explained by single factor was 29.62 percent which is less than 40 percent (Podsakoff *et al.*, 2003).

5. Data analysis and results

In analyzing the collected data, we applied SEM. We followed two-step procedure as suggested by Anderson and Gerbing (1988). In the first step, we assessed convergent and discriminant validity. Therefore, the second step evaluates structural model and investigates the relationship among constructs. SmartPLS version 3.2.7 is used to analyze the SEM (Ringle *et al.*, 2015).

5.1 Measurement model

The measurement model was assessed for convergent and discriminant validity of the constructs. Convergent validity was measured by examining factor loading, average variance extracted and composite reliability. The values of average variance extracted must be higher than 0.5 as suggested by Fornell and Larcker (1981). Factor loading values needed to be greater than 0.6 as recommended by Chin (1998). For construct reliability, values of composite reliability should be greater than 0.70 as suggested by J.F. Hair *et al.* (2010). Table I depicts the results of the measurement model and reveals that the convergent validity of the model is achieved.

Once the convergent validity is confirmed, the discriminant validity of the constructs needs to be assessed. The discriminant validity of the constructs was tested using Fornell and Larcker (1981) criterion. According to D. Compeau *et al.* (1999), "the average variance shared between each construct and its measure should be greater than the variance shared between the constructs and other constructs." Table II exhibits that the square root of the AVE (as shown in italics on the diagonals) is greater than the corresponding row and column, which confirms the discriminant validity of the constructs.

5.2 Structural model

The first step of structural model is the assessment of multicollinearity among constructs. According to Kock and Lynn (2012), lateral collinearity may mislead the study findings. In this study, multicollinearity issue is assessed with VIF. Therefore, results of lateral collinearity assessment revealed that lateral multicollinearity is not a concern in this study, as all the values of exogenous variables were lower than 3.3 as suggested by Diamantopoulos and Siguaw (2006). Thus, the causal relationship among constructs can be assessed further.

Items	Loading	CR	AVE
<i>Assurance</i>			
ASS1: Transactions by internet banking website are reliable	0.973	0.979	0.941
ASS2: My transaction data are protected by internet banking website	0.961		
ASS3: I feel relieved to transact through internet banking website	0.976		
<i>Customer service</i>			
CS1: The online transaction process was accurate	0.787	0.818	0.534
CS3: Web page loaded quickly on internet banking website	0.847		
CS4: Internet banking website performs the service correctly at the first time	0.624		
CS6: When problems occur, the internet banking system guides me to solve them	0.640		
<i>Effort expectancy</i>			
EE1: My interaction with internet banking would be clear and understandable	0.800	0.944	0.808
EE2: It would be easy for me to become skillful by using internet banking	0.957		
EE3: I would find internet banking easy to use	0.939		
EE4: I think that learning to operate internet banking would be easy for me	0.891		
<i>Intention to adopt</i>			
INT1: I intend to use internet banking in the next months	0.866	0.914	0.779
INT2: I predict I would use internet banking in the next months	0.890		
INT3: I plan to use internet banking in the next months	0.893		
<i>Performance expectancy</i>			
PE1: Internet banking is useful to carry out my tasks	0.903	0.929	0.767
PE2: I think that using internet banking would enable me to conduct tasks more quickly	0.867		
PE3: I think that using internet banking would increase my productivity	0.874		
PE4: I think that using internet banking would improve my performance	0.858		
<i>Reliability</i>			
REL1: You get what you order from bank website	0.833	0.910	0.771
REL2: The transaction that is done processed accurately by the bank website	0.893		
REL3: The transaction is done by the time promised by the bank website	0.906		
<i>Website design</i>			
WD1: I can complete online transactions easily	0.920	0.927	0.760
WD2: I can sign up on internet banking website easily	0.834		
WD3: It is easy to understand which button should be clicked for the next step	0.947		
WD4: Internet banking website enables me to complete a transaction quickly	0.776		

Table I.
Measurement model

Constructs	ASS	CS	EE	INT	PE	RL	WD
Assurance	0.970						
Customer service	0.460	0.731					
Effort expectancy	0.271	0.266	0.899				
Intention	0.777	0.554	0.430	0.883			
Performance expectancy	0.521	0.438	0.369	0.657	0.876		
Reliability	0.506	0.458	0.317	0.692	0.548	0.878	
Website design	0.287	0.306	0.279	0.454	0.448	0.283	0.872

Table II.
Discriminant validity
using Fornell and
Larcker's criterion

5.2.1 Hypotheses testing. Using structural model, path estimates and *t*-statistics were calculated. For *t*-statistics, a bootstrapping procedure was used with a re-sampling of 500. Table III presents the results of path coefficient (β) and *t*-statistics.

The results of the structural model revealed that the user intention to adopt internet banking is jointly predicted by performance expectancy, effort expectancy, assurance,

Table III.
Hypothesis testing

Hypothesis	Constructs	(β)	SE	<i>t</i> -statistics
<i>H1</i>	Performance expectancy → Intention	0.126	0.045	2.826***
<i>H2</i>	Effort expectancy → Intention	0.111	0.030	3.639***
<i>H3</i>	Effort expectancy → Performance expectancy	0.207	0.055	3.740***
<i>H4</i>	Assurance → Intention	0.464	0.065	7.147***
<i>H5</i>	Reliability → Intention	0.275	0.049	5.571***
<i>H6</i>	Customer service → Performance expectancy	0.290	0.056	5.202***
<i>H7</i>	Customer service → Effort expectancy	0.200	0.053	3.745***
<i>H8</i>	Customer service → Intention	0.091	0.042	2.163**
<i>H9</i>	Website design → Performance expectancy	0.302	0.050	6.043***
<i>H10</i>	Website design → Effort expectancy	0.217	0.056	3.873***
<i>H11</i>	Website design → Intention	0.128	0.031	4.133***

Notes: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$ (one-tailed)

reliability, customer service and website design and explained 79 percent variance in explaining user's intention. Performance expectancy and effort expectancy had a positive influence on the user intention to adopt internet banking ($\beta = 0.126$, *t*-value 2.826, significance $p < 0.001$ and $\beta = 0.111$, *t*-value 3.639, significance $p < 0.001$), hence supporting *H1* and *H2*. Effort expectancy had a significant influence on performance expectancy ($\beta = 0.207$, *t*-value 3.740, significance $p < 0.001$), confirming *H3*. Similarly, customer assurance and reliability had a significant influence on the user intention to adopt internet banking ($\beta = 0.464$, *t*-value 7.147, significance $p < 0.001$ and $\beta = 0.275$, *t*-value 5.571, significance $p < 0.001$), thus confirming *H4* and *H5*. Customer service had a significant influence on performance expectancy, effort expectancy and user intention ($\beta = 0.290$, *t*-value 5.202, significance $p < 0.001$, $\beta = 0.200$, *t*-value 3.745, significance $p < 0.001$, and $\beta = 0.091$, *t*-value 2.163, significance $p < 0.001$), thus confirming *H6–H8*. Finally, the website design had a significant influence on performance expectancy, effort expectancy and the user intention to adopt internet banking ($\beta = 0.302$, *t*-value 6.043, significance $p < 0.001$, $\beta = 0.217$, *t*-value 3.873, significance $p < 0.001$, and $\beta = 0.128$, *t*-value 4.133, significance $p < 0.001$), confirming *H9–H11*.

5.2.2 Mediation. Bootstrapping method and indirect effect were observed to have a mediating relationship. This study has followed Preacher and Hayes (2004, 2008) guideline for mediating relationship. Preacher and Hayes (2008) indicate that the indirect effect, 95% boot confidence interval (CI: LL–UL) does not straddle a “0” between variables. Table IV depicts the results of mediation.

Mediation results, as tabulated in Table IV, show that the indirect effect (WD → EE → PE, $\beta = 0.217 \times 0.207 = 0.045$, *t*-value of 2.660, $p < 0.01$) is significant, hence confirming *H12*. Next to this, *H13* is confirmed as the indirect effect (CS → EE → PE, $\beta = 0.200 \times 0.207 = 0.041$, *t*-value of 2.577, at $p < 0.01$) is significant. Finally, the indirect effect (EE → PE → INT, $\beta = 0.207 \times 0.120 = 0.025$, *t*-value of 2.069, $p < 0.05$) is significant, confirming *H14*. Besides indirect effects, results also indicate that there is mediation given that the indirect effects do not straddle a 0 in between, which indicates an additional support for *H12–H14*.

Table IV.
Mediation analysis

Hypothesis	Constructs	Indirect effect (β)	SE	<i>t</i> -statistic	Interval estimate	
					LL	UL
<i>H12</i>	WD → EE → PE	0.045	0.017	2.660**	0.019	0.074
<i>H13</i>	CS → EE → PE	0.041	0.016	2.577**	0.017	0.071
<i>H14</i>	EE → PE → INT	0.025	0.013	2.069*	0.009	0.050

Notes: LL, lower limit; UL, upper limit at 95% confidence interval. * $p < 0.05$; ** $p < 0.01$ (two-tailed)

5.3 Evaluating effect sizes (f^2)

In order to assess the relative impact of a predictor construct on an endogenous construct, we used (f^2) analysis. According to Cohen (1988), the acceptable effect sizes (f^2) values 0.35, 0.15 and 0.02 are considered substantial, medium and small effect sizes, respectively. We also assessed the predictive relevance of the constructs using blindfolding procedure. Table V presents the results of (f^2) and Q^2 .

Table V indicates that there is a difference in effect sizes. The findings revealed that for intention to adopt internet banking assurance has a substantial effect size (0.636). Reliability has shown a medium effect size (0.214). Therefore, all other constructs have small effect size on the user intention to adopt internet banking. With regard to predictive relevance, results showed that the Q^2 value for intention to adopt internet banking is substantial (0.570).

5.4 Importance performance matrix analysis (IPMA)

In order to assess constructs importance and performance, we ran a *post hoc* importance performance matrix analysis (IPMA) using intention to adopt internet banking as target construct. Table VI indicates the importance and performance of the constructs.

Table VI depicts that assurance is the most important factor in order to determine user's intention to adopt internet banking due to high importance (0.423) and performance (71.338) values when compared to other latent variables. The results revealed that reliability is the second most important factor with a medium level of importance (0.278) and performance (66.195) values. Therefore, the importance of performance expectancy, effort expectancy, customer service and website design lags behind assurance. The importance and performance of the constructs can be seen in IPMA map (Figure 1).

6. Discussion

This study intends to examine the method by which the integration of UTAUT and E-SQ influences the user intention to adopt internet banking. The findings of the structural

Constructs	Behavioral intention to adopt internet banking			Size
	R^2	Q^2	(f^2)	
Behavioral intention	0.790	0.570		
Assurance			0.636	Substantial
Customer service			0.027	Small
Effort expectancy			0.048	Small
Performance expectancy			0.040	Small
Reliability			0.214	Medium
Website design			0.060	Small

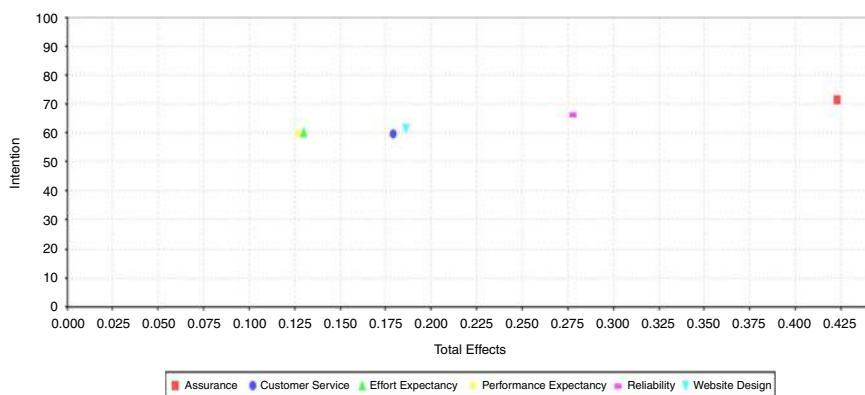
Notes: f^2 : small: 0.02; medium: 0.15; substantial: 0.35

Table V.
Effect size analysis
(f^2) and predictive
relevance Q^2

Latent constructs	Importance (Total effect of the latent variable intention to adopt internet banking)	Performance (index values)
Assurance	0.423	71.338
Customer service	0.179	59.662
Effort expectancy	0.130	60.356
Performance expectancy	0.127	59.708
Reliability	0.278	66.195
Website design	0.186	61.391

Table VI.
Total effects and
index values

Figure 1.
Importance-
performance map



model revealed that altogether technology (UTAUT) and service quality (E-SQ) factors explained R^2 of 79 percent variance in the user intention to adopt internet banking and confirmed the validity of newly developed integrated model. Structural model results indicated that performance expectancy and effort expectancy significantly influence the user intention to adopt internet banking and these findings are consistent with previous studies (Oliveira *et al.*, 2016; Rahi, Ghani, Alnaser and Ngah, 2018; Rahi, Ghani and Ngah, 2018; Venkatesh *et al.*, 2003), meaning that internet banking users care about website ease provided by relative banks website. With regard to E-SQ, results have shown a significant influence of reliability and assurance on the user intention to adopt internet banking and these findings are in line with previous studies (Bauer *et al.*, 2005, 2006; Blut, 2016; Ho and Lin, 2010; Parasuraman *et al.*, 2005; Rahi, 2016b). Similarly, website design and customer service have depicted a significant influence on the user intention to adopt internet banking, with these findings being consistent with previous studies (Foon and Fah, 2011; Martins *et al.*, 2014; Ghani *et al.*, 2017; Morosan and DeFranco, 2016; Oliveira *et al.*, 2016; Ghani *et al.*, 2017; Venkatesh *et al.*, 2003). The results also confirmed the mediating role of performance expectancy and effort expectancy among website design customer service and the user intention to adopt internet banking and these findings are consistent with previous findings (Al-Qeisi *et al.*, 2014; Wang *et al.*, 2017).

6.1 Theoretical implications

In theory perspective, this study has had an immense contribution. First, literature shows that there is lack of studies that investigated internet banking adoption issue with the integration of unified theory of acceptance and the use of technology and E-SQ in the banking sector of Pakistan. Thus, the present study fills the gap by integrating UTAUT theory in the developing economy of Pakistan. The findings revealed that UTAUT model has substantial explanatory power to predict user's intention to adopt internet banking. Furthermore, these findings enrich the UTAUT literature in the internet banking context. Second, E-SQ is a new phenomenon in services marketing literature and there is a slight focus on E-SQ dimensions (Hahn *et al.*, 2017). This study brought together a collection of studies on E-SQ and synthesized them into four core dimensions, namely, website design, customer service, assurance and reliability. Additionally, the study contributed toward service quality literature by identifying E-SQ dimensions and confirmed the validity of these dimensions with an intention to adopt internet banking. Finally, the current study

contributed toward IS literature by identifying some important antecedents of performance expectancy and effort expectancy. Previous studies have discussed about performance expectancy and effort expectancy but a very few have demonstrated about antecedents of performance expectancy and effort expectancy. Thus, identification of new antecedents of performance expectancy and effort expectancy contributes a new dimension in the relationship of UTAUT theory.

6.2 Managerial implications

This study has several managerial implications that can be derived from the findings of the research model. IPMA showed that assurance and reliability are the most influential factor in a newly developed integrated model. Thus, it is suggested that policymakers and website designers should develop online banking ISs by offering better assurance and reliability to internet banking users. Another contribution of this study is the development of integrated model from the end-user's point of view by reviewing service quality and IS literature in the internet banking context. Hence, factors underpinned integrated model provide valuable insight to policymakers to understand internet banking system according to user's need. The empirical findings prove that the new model is ready to serve as a marketing research instrument, especially for service providers interested in measuring customer's intention toward the adoption of technology. This study also suggests that website design and customer service within the integrated model are the influential factors; thus, management and web designers should take into consideration the aspects of website design in order to increase the performance expectancy and effort expectancy of the internet banking users.

7. Conclusion and future research directions

This research has examined the internet banking adoption trend from an individual user's perspective. In general, the research analyzed the prior and contemporary literature on IS and service marketing that directed the development of an integrated technology model. The findings of this study showed that the user intention to adopt internet banking is jointly predicted by performance expectancy, effort expectancy, website design, customer service, assurance and reliability and brought R^2 of 79 percent variance in the user intention to adopt internet banking. The effect size analysis revealed that the intention to adopt internet banking assurance has a substantial effect size; therefore, reliability has shown a medium effect size. The mediating effect of performance expectancy and effort expectancy was also confirmed, indicating that the ease of web-use enhances user's performance expectancy. In previous studies, customer service has found an essential construct in order to increase customer's performance expectancy toward the use of technology. Therefore, the present study has revealed significant and positive mediating role of effort expectancy between customer service and performance expectancy. Finally, this study confirmed that customer service and website design are the most important determinants and boost user's performance expectancy and effort expectancy toward the use of internet banking technology. The findings emanating from current research suggest future research directions. This study has examined UTAUT model which is in line with the prior research (Chaouali *et al.*, 2016; Morosan and DeFranco, 2016). Therefore, future research could be conducted by integrating other UTAUT factors, namely, social influence and facilitating conditions. The focus of this study is on user adoption behavior; therefore, several beneficial areas remain to be explored in other online technology acceptance, for instance, online shopping or e-commerce. Thus, in order to investigate user behavior toward technology, academic researcher may apply this integrated model in user acceptance or user continuance intention context.

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Further reading

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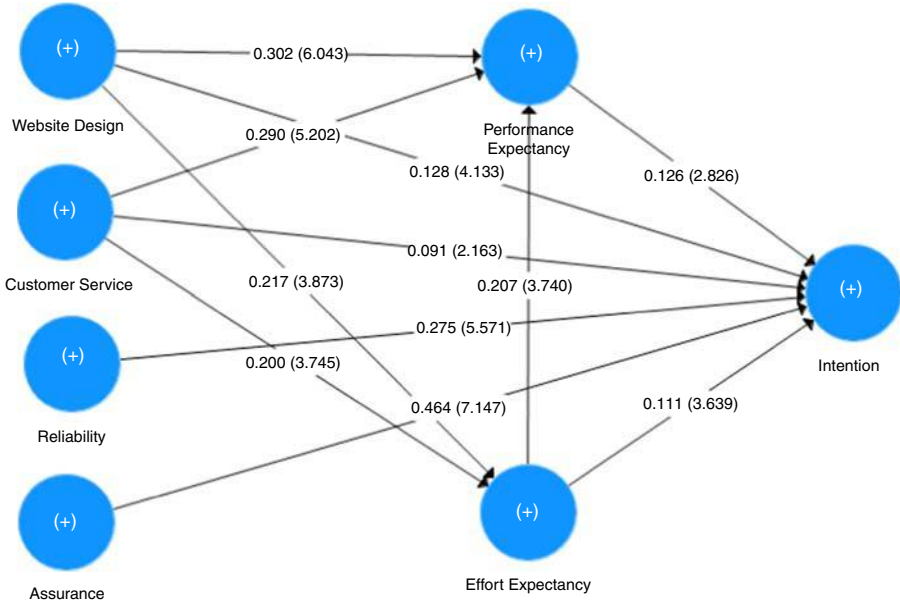


Figure A1.
Path coefficient
and *t*-values

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