Factors influencing the intention to use mobile banking

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Abstract: This paper aims to investigate the main factors that influence the intention to use mobile banking in Qatar. The technology acceptance model (TAM) and information system success model (ISSM) were integrated and extended with trust, to investigate the intention to use mobile banking. Data were collected from 288 participants in Qatar via an online questionnaire. Service quality, perceived usefulness, and perceived ease of use were significant influencers of intention to use mobile banking apps. Unfortunately, the influence of trust, system quality and information quality was insignificant. R^2 indicates that the predictors of mobile banking explained (70.7%) of behavioural intention. Findings offer banks an opportunity to understand the factors influencing mobile banking adoption in Qatar. Furthermore, this study raised many questions regarding Qatari's perceptions regarding the factors included in the conceptual model, and provided a better understanding of the factors influencing mobile banking in Qatar.

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1 Introduction

Because of the quick advancement in information technology, smartphones provided substantial opportunities for mobile-based services, where such services enable businesses to quickly gain competitive benefits. Technology is pervasive and rapid in all aspects of our lives; for example, the telecom sector has grown dramatically in every area of the world, including both developed and developing countries such as Qatar (Kumar et al., 2020). In 2020, reports indicated that mobile subscriptions reached 131 per 100 individuals (O'Dea, 2021). E-commerce or e-service is the act of delivering services via the internet (Alotaibi, 2020), whereas m-service/m-commerce refers to any transaction conducted using mobile devices (Mort and Drennan, 2005).

Mobile banking (m-banking) addresses an important deficiency of e-banking by reducing the user's need to stick to a specific location, where smartphones can offer banking services on the run. As a result, users are increasingly using mobile devices to do banking services like payments, reviewing balances, accessing account details, seeing, and cancelling direct debits, and quickly identifying user activities (Baabdullah et al., 2019). Mobile banking is defined as "a channel through which a customer communicates with a bank via a mobile device, such as a phone or a personal digital assistant" (Kumar et al., 2020). It enables its users to conduct remote transactions at a cheap cost or free of charge. Mobile banking has effectively resulted in smooth and unconstrained banking services. However, this study will attempt to expand two famous models with trust to understand the factors that will influence the intention to use mobile banking in Qatar. The technology acceptance model (TAM) and IS success model (ISSM) are integrated to comprehensively cover their distinct views on technology adoption. Research in the technology adoption lacks this integrated view, where the majority of research build their research framework on one theory. In addition, this study extends this proposed model with trust, where the majority of research supported the role of trust in areas related to financial transactions (Abu-Shanab, 2014).

This study is the first to integrate the two models when we focus on Qatar and mobile banking. It comes in a critical era, where many banking customers were encouraged to do transactions remotely and with minimal face-to-face transaction (based on Covid-19 experience). This study will explore the literature, and then describe the research method. Section 4 will describe the data analysis and discussion, followed by our conclusions and limitations in Section 5.

2   Theoretical background

Mobile apps have become the main trend among mobile users in all industries throughout the world (Hammouri et al., 2021). Qatar witnessed a fast development rates and this became more critical since the blockade by neighbouring countries in May 2017 (Abdelkader Benmansour, 2019). Moreover, according to Roy (2017), the growing popularity of smartphones has resulted in the development and widespread use of mobile applications to satisfy the diverse needs of users for various purposes. In July 2000, the Qatari government launched its e-Government program to develop a new dynamic relationship between the government and citizens (Al-Shafi and Weerakkody, 1970). The Supreme Council for Information and Communications Technology was formed to speed up Qatar's transformation towards an information-based society (ictQATAR, 2014).

Qatar is one of the forward-looking states in the use of smartphones, where having access to e-banking facilities is a powerful e-commerce ecosystem (Al-Khalaf and Choe, 2020). Qatar's Telecom Regulatory Commission reported that almost three million residents in Qatar are mobile users. The global digital banking platform market is expected to reach $9 billion by 2026, with as annual growth rate of 16% (DataReportal, 2021). Banks have changed their products and services in recent years to cater to an increasingly mobile client base. This is supported by smartphone Qatari users (75% used smartphones); placing it first in the Gulf area in terms of access (Metodieva, 2012). In Qatar, all commercial banks provide mobile banking services for both personal and corporate accounts (refer to the complete guide to mobile banking in Qatar, 2021).

2.1   Technology acceptance model

The first model utilised in this paper is the TAM (Davis, 1989). TAM focuses on computer users and demonstrates how people may embrace and utilise new technologies. The major goal of the theory is to show consumers' potential, and emphasise how users feel when the system is user-friendly (Lule et al., 2012). The TAM evolved from the Theory of reasoned action (TRA, Fishbein and Ajzen, 1975), and extended more by Davis et al. (1989). The TAM included two major components: perceived usefulness (PU) and perceived ease of use (PEOU). PU is defined as "the subjective probability of a potential user that the use of a particular application system will raise the performance of its functionality" and PEOU is defined as "the degree to which the potential user expects the target system to be effort-free" [Davis et al. (1989), p.985]. Both variables were used to predict the intention to use a technology.

2.2   Information system success model

DeLone and Mclean proposed the information system success model (ISSM) in 2003 to investigate the elements that influence the success of a new system's deployment. It considers the level of quality in terms of features, services, information, and tools used by any information system. They first proposed information quality and system quality, then modified the ISSM by adding a new quality parameter, which is service quality (SERVQ – combining the individual and organisational effect into a single variable). Such set of predictors targeted the net benefit of the system (DeLone and McLean, 2003).

The model uses quality characteristics as predictors of user intention of using mobile banking, and the positive relationship between information quality (IQ), service quality (SERVQ), and system quality (SYSQ) with the intention to use mobile banking. Also, to assess the information system's success (DeLone and McLean, 2003). Determining the elements that influence the amount of actual use of technology has been seen as a critical goal for modifying the features of a technological service to make its acceptance more appealing. Much research has been conducted on mobile banking (Baptista and Oliveira, 2015; Choudrie et al., 2018). The characteristics that could influence m-banking use were also investigated in several contexts (e.g., Saudi Arabia, South Korea, Taiwan, and Mozambique), where such studies investigated the factors that may influence the utilisation of mobile banking (Baabdullah et al., 2019).

## 3 Research model and hypotheses

Many factors can influence the intention to use mobile banking, as evidenced by the literature review and theories explored. As a result, a proposed model was created by combining the two models TAM and ISSM with one additional factor which is trust. The proposed model investigates the influence of these six external variables on the intention to use m-banking. Even though these factors evaluated by earlier studies, still this study is one of the first to integrate them and extend with trust. Figure 1 shows the proposed research model utilises five main factors as predictors to the use of mobile banking, namely: service quality, information quality, system quality, PU, and PEOU. Moreover, the model has one direct determinant of the intention to use (or continued use of) mobile banking, that is trust. Following is a research review of each proposed predictor and the direction of such relationship. In addition, we will test the influence of few demographic factors. Figure 1 depicts the research model.

3.1 Perceived usefulness

Perceived usefulness is one of the popular factors related to IT use and performance since its proposition by the TAM (Munoz-Leiva et al., 2016). PU has been viewed by Rogers (2003) as a "relative advantage" and defined as "the way it is perceived as being 'better' than its predecessor." This variable is important for m-banking applications, where creative application m-banking offered to customers is strongly connected to the benefits it provides (Munoz-Leiva et al., 2016). The same source found that PU has a positive influence on the intention to use m-banking. Second, Mostafa and Eneizan (2018) considered that PU is a significant influencer on people's intentions to use m-banking. Third, Kumar et al. (2020) reported that it has a huge impact on people's willingness to adopt new technologies. Most of reported research has found that PU has a positive effect on consumers' attitudes and acceptance toward new information technology uptake in many countries like Jordan, Taiwan, India, and Saudi Arabia.

H1 Perceived usefulness will have a significant positive impact on users' intention to use m-banking.

Figure 1   Proposed research model
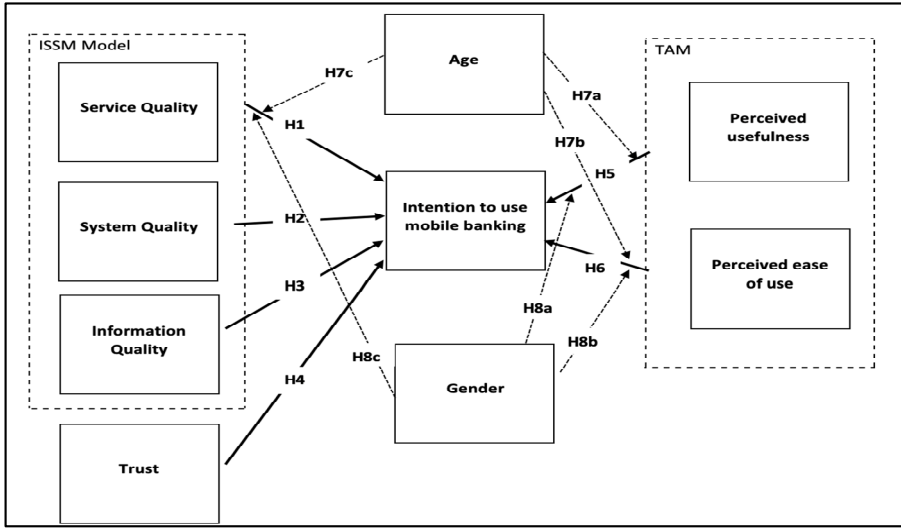
3.2   *Perceived ease of use*

PEOU means how much a person believes that using new technology will be less complicated. The approach to this construct is based on measurements of how technologies enable users to complete jobs faster, enhance productivity, performance, and work efficiency (Munoz-Leiva et al., 2016). Previous studies have reinforced the effect of PEOU on attitude (Chau and Lai, 2003). This variable had a positive impact on attitudes when explored on mobile social network games (Park et al., 2014) and attitudes toward m-games (Ha et al., 2007).

H2   PEoU will have a significant positive impact on user's intention to use m-banking.

3.3   *System quality*

System quality is represented in the technological system's ease of use, usability, navigability, availability, dependability, flexibility, and reaction time (DeLone and McLean, 2003). It illustrated the broad scope of this factor in a variety of ways that have been activated and measured. Ease of use was the most used metric for SYSQ in the context of e-commerce and IB (Brown and Jayakody, 2008; Brown and Buys, 2005; Liao and Cheung, 2008; Karjaluoto et al., 2009; Wang and Liao, 2007). Customer satisfaction with m-commerce is measured in terms of ease of use and appearance (both components of SYSQ) (Wang and Liao, 2007). Lee and Chung (2009) considered the quality of interface design as the main influencer on customer satisfaction with m-banking.

H3   System quality will have a significant positive impact on users' intention to use m-banking.

3.4 Service quality

Service quality, as defined by DeLone and McLean (2003), is the entire support provided by the service provider, often known as customer support (Wang et al., 2001). While Landram et al. (2009) stated that the SEVQ factor has several dimensions, which include tangibility, dependability, assurance, empathy, and responsiveness. Research found that SEVQ is a key driver of e-commerce satisfaction (Massad et al., 2006; Brown and Jayakody, 2008), as well as IB satisfaction (Brown and Buys, 2005). Responsiveness is a major feature of SEVQ (Landram et al., 2009), which is identified as a significant element impacting IB customer satisfaction (Brown et al., 2010; Liao and Cheung, 2008).

H4 Service quality will have a significant positive impact on users' intention to use m-banking.

3.5 Information quality

Information quality (IQ) is the timeliness, precision, adequacy, correctness, completeness, currency, clarity, and relevance of the information given by a system (DeLone and McLean, 2003). It is also known as content quality, particularly in the e-commerce perspective (Wang et al., 2001; Molla and Licker, 2001; Brown et al., 2010). The substantial effect of information quality on consumer satisfaction has been supported in many different sectors including internet banking (Brown and Buys, 2005), m-commerce (Wang and Liao, 2007), e-commerce, (Brown and Jayakody, 2008), and cell phone banking (Lee and Chung, 2009),

H5 Information quality will have a significant positive impact on user intention to use mobile banking.

3.6 Trust

According to Brown and Jayakody (2008), e-commerce vendor credibility leads to increased customer satisfaction. The significance of trust in IB satisfaction has also been supported (Hwang et al., 2007). Because of the novelty of m-banking, Wati et al. (2009) emphasise trust as being especially important for customer happiness. Lee and Chung (2009) stated that trust has a significant influence on customer satisfaction with mobile banking. The findings strongly suggested that trust is an important component in predicting m-banking. In other words, customers who trust banks appear to be more encouraged to use m-banking. After all, they are conducted in an open environment, exposing their applications and outcomes to security and dangers such as theft, fraud, breaches of personal privacy, and hacker assaults (Nguyen and Nguyen, 2020).

H6 Trust will have a significant positive impact on users' intention to use m- banking.

3.7 Intention use

Individual intentions, according to Ajzen and Fishbein (1980), are predictor of user's behaviour, where a person can act willingly and use technology. According to Luarn and Lin, (2005), the intention to use will affect user behaviour in TAM. In the UTAUT model Berry, (2017) stated that user behaviour is an endogenous variable. In India, research

reported that behavioural intention impacts m-payment use behaviour (Gupta and Arora, 2019; Loisa and Purwanto, 2020). According to Bagozzi (2007), there is a weak theoretical link between intention and actual use. He claimed that purpose is not indicative of actual use since individual's decisions to accept new technologies vary over time. Finally, Bagozzi viewed TAM as a philosophical theoretical model that relies on the individual's will to utilise the real system.

3.8   Age

Research on m-banking adoption found that typical users were young in age (Joshua and Koshy, 2011), where elderly might have more resistance to change and a negative attitude toward using m-banking services (Laukkanen et al., 2007). According to some studies, respondents aged around 50 were more eager to use m-banking services (Suoranta and Mattila, 2004). Other studies showed that typical m-banking users were aged between 30 and 49 (Laukkanen and Pasanen, 2008). Finally, middle-aged or older customers were the primary users of e-banking (Laforet and Li, 2005; Dasgupta et al., 2011). Most studies adopted age as a moderating factor in internet or mobile banking area (Alsalem and Abu-Shanab, 2022). Based on the previous contradictory findings, it is necessary to test whether age has a moderating influence. As a result, this study proposes the following:

H7a   The influence of perceived usefulness on Intention to use mobile banking will be moderated by age.

H7b   The influence of PEOU on intention to use mobile banking will be moderated by age.

H7c   The influence of service quality on intention to use mobile banking will be moderated by age.

3.9   Gender

Personal traits have been explored by many researchers and yielded significant results in technology adoption and mobile banking in specific (Al-Dwairi et al., 2019). Research has reported a more potent share of PU of cellular offerings amongst guys than amongst women (Nysveen et al., 2005). The reason might be that men seem task-oriented than women, and digital banking offerings are commonly prompted via means of purpose achievement (Cruz et al., 2010). Moreover, empirical research has found out statistical distinction between women and men respondents. For instance, Garbarino and Strahilevitz (2004) claim that peer reviews have more impact on women within mobile services. Nysveen et al. (2005) found that males are much more likely to apply m-banking than females. Similar results are reported by other studies (Laukkanen and Pasanen, 2008; Koenig-Lewis et al., 2010), where males focus more on Internet price and provider charges than females (Cruz et al., 2010).

H8a   The influence of perceived usefulness on intention to use mobile banking will be moderated by gender.

H8b   The influence of PEOU on intention to use mobile banking will be moderated by gender.

H8c The influence of service quality on intention to use mobile banking will be moderated by gender.

4 Method and data analysis

This study adopted an online survey to collect data, where an instrument including 33 items measuring the seven variables was utilised. The number of usable responses were 284, where four people didn't answer the survey. The following sections describe the data analysis, where we describe the instrument and validate its use through the inner model.

4.1 Correlations

The correlation matrix is used to find the bivariate relationship between variables in the model (Creswell, 2008). The power of test between the independent variables and dependent variable is measured using Pearson (β) (Field, 2009). Table 1 summarises the Pearson correlation analysis used. Based on the work of Dancey and Reidy (2007), a correlation estimate of 0.7 is believed to be high, a value of 0.4–0.69 is perceived as strong, a value of 0.3–0.39 is perceived as moderate, a value of 0.2–0.29 is deemed weak, and a value < 0.19 is considered negligible. Pearson's correlation values advocated a very concrete, positive relationship between all variables. Table 1 depicts a strong association between all variables on a bivariate bases (0.01 level). Furthermore, because all correlations are less than 0.85 it implies there is no multicollinearity issues in the model (Evans, 2016).

Table 1 Pearson correlation for all the constructs

Constructs	PU	SERVQ	SYSQ	IQ	T	PEOU
Perceived usefulness	1					
Service quality	.597**	1				
System quality	.499**	.692**	1			
Information quality	.472**	.570**	.562**	1		
Trust	.623**	.661**	.549**	.651**	1	
Perceived ease of use	.758**	.666**	.640**	.499**	.632**	1
Intention to use	*.754***	*.634***	*.527***	*.432***	*.581***	*.805***

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

4.2 Assessment of measurements model (outer model)

The reliability analysis is used to validate the research instrument (questionnaire). Cronbach's alpha and reliability assess the items' dependability and internal consistency of the same construct. According to Pallant (2016), a Cronbach's alpha value greater than 0.7 indicates an acceptable level of reliability. However, Khidzir et al. (2018) and Hulin et al. (2001) believed that a value less than 0.6 is low, a value between 0.6 and 0.8 is acceptable, and a value greater than 0.8 is excellent. Furthermore, Hair et al. (2014) used composite reliability to assess internal consistency, stating that a value greater than 0.7 is

considered acceptable. Table 2 depicts that Cronbach's alpha is at recommended levels or more for all variables (greater than 0.8).

Table 2   Cronbach's alpha value of main variables

Constructs	N	Number of items	Cronbach's alpha
Information quality (IQ)	279	4	0.893
Perceived ease of use (PEOU)	279	6	0.922
Perceived usefulness (PU)	279	5	0.898
Service quality (SERVQ)	279	5	0.853
System quality (SYSQ)	279	4	0.799
Trust (T)	279	5	0.919
Intention to use mobile banking (INTENUSE)	279	4	0.900

Convergent validity inspects if the selected items can exemplify the relevant construct. Discriminant validity evaluates whether the items do not belong to the variables they are measuring (Anderson and Gerbing, 1988). The average variant extracted (AVE) is a measure of the variance explained in the predictor by the common dimension selected. The average value of all constructs must be greater than 0.5 (Hair et al., 2010). The convergent validity estimates were all more than 0.5. While PU, service quality, and system quality values are less than 0.5.

Table 3   Convergent validity

Constructs	Items	Loading	Composite reliability	AVE
Intention to use mobile banking	INTENUSE1	0.718	0.839	0.567
	INTENUSE2	0.744		
	INTENUSE3	0.763		
	INTENUSE4	0.785		
Information quality	IQ1	0.789	0.85	0.587
	IQ2	0.739		
	IQ3	0.813		
	IQ4	0.721		
Perceived ease of use	PEOU1	0.656	0.86	0.506
	PEOU2	0.67		
	PEOU3	0.715		
	PEOU4	0.778		
	PEOU5	0.742		
	PEOU6	0.7		
Perceived usefulness	PU1	0.655	0.791	0.431
	PU2	0.657		
	PU3	0.64		
	PU4	0.714		
	PU5	0.613		

Table 3 Convergent validity (continued)

Constructs	Items	Loading	Composite reliability	AVE
Service quality	SERVQ1	0.444	0.739	0.368
	SERVQ2	0.595		
	SERVQ3	0.647		
	SERVQ4	0.744		
	SERVQ5	0.562		
System quality	SYSQ1	0.576	0.706	0.378
	SYSQ2	0.729		
	SYSQ3	0.548		
	SYSQ4	0.591		
Trust	T1	0.703	0.85	0.532
	T2	0.745		
	T3	0.752		
	T4	0.73		
	T5	0.716		

The service quality factor (0.368) has the lowest value, while information quality has the highest (0.587). Inspecting factor loadings decide if convergent validity is attained or not. Items used should have a higher association with their assigned constructs (> 0.6) when establishing loadings analysis (Chin, 1998). As seen in Table 3, the majority of loadings are greater than 0.70, with few less than the acceptable level of 0.60. According to MacCallum et al. (1999) it is acceptable if one is less than 0.50, because most AVE values are greater than 0.5 and only three AVE values are less than 0.5 which are PU, service quality and system quality, these low loadings do not appear to have a significant impact on model fit or internal consistency. Composite reliability estimates between 0.706 and 0.860 support internal consistency in a sufficient manner (Hair et al., 2014; Fornell and Larcker, 1981). Fornell and Larcker (1981) stated that if AVE is less than 0.5 and though composite reliability is greater than 0.6, the construct's convergent validity is still sufficient.

4.3 Structural model

According to Hair et al. (2014), a structural model is tested using the coefficient of determination. The estimated coefficient of determination (R^2) was 0.07, and the adjusted value 0.701 ($p < 0.001$). Falk and Miller (1992) suggested an R-square value of 0.10 as a minimum acceptable value. In addition, Chin (1998) recommended that values greater than 0.67 are considered high, whereas values between 0.33 and 0.67 are considered moderate. Durbin Watson (DW) statistic is used to examine residuals from the regression analysis (value between 0 and 4). A value of 2.0 indicates that there is no evidence of autocorrelation in the sample. While values between 0 and less than 2 indicate positive autocorrelation, but values between 2 and 4 show negative autocorrelation (Evans, 2016). As a result, R^2 of the Intention to Use Mobile Banking is described as high (Falk and Miller, 1992). Durbin Watson value is 2.085, which means there is zero autocorrelation and no problem with the data.

The beta values are adopted to assess the relationship between the dependent variable and the set of predictors. Table 4 summarises the results of hypotheses testing. The direct causal relationship between intention to use mobile banking and the predictors is indicated by the significance of the beta value. Results indicated that three independent variables have an influence on the intention to use mobile banking: PEOU, PU, and service quality, where their P-values are less than 0.05. However, information quality (IQ), system quality (SYSQ) and trust (T) indicate that there is no influence on the intention to use mobile banking when jointly entered into the model (even though their bivariate correlations showed significant relationship with ITU).

Table 4   Coefficient table of multiple regression test

Constructs	Unstand. coeff.		Stand. coeff.	*t*	*Sig.*	Collinearity statistics	
	B	*Std. error*	*Beta*			*Tolerance*	*VIF*
Perceived usefulness	0.318	0.055	0.308	5.829	*<.001*	0.385	2.598
Service quality	0.153	0.052	0.157	2.929	*0.004*	0.375	2.665
System quality	−0.042	0.047	−0.045	−0.899	0.37	0.434	2.304
Information quality	−0.033	0.037	−0.041	−0.896	0.371	0.511	1.956
Trust	0.015	0.044	0.018	0.342	0.732	0.396	2.524
Perceived ease of use	0.462	0.054	0.504	8.631	*<.001*	0.315	3.172

Note: Dependent variable: intention to use mobile banking.

Among the factors influencing intention to use mobile banking, PEOU ($\beta = 0.504$), and PU ($\beta = 0.308$) had the greatest positive effect on intention to use mobile banking, which supports H2 and H1, respectively. The results indicated that service quality ($\beta = 0.157$, P 0.004) influence intention to use mobile banking, which provides a support for hypothesis H4. Nevertheless, information quality ($\beta = -0.041$, $P > 0.05$), system quality ($\beta = -0.045$, $P > 0.05$), and trust ($\beta = 0.018$, $P > 0.05$) did not show significant influence on intention to use mobile banking, and therefore H3, H5 and H6 were not supported.

Table 5   Summary of hypotheses testing related to the whole model

Hypotheses	*B*	*Sig*	*Results*
H1: Perceived usefulness will have a significant positive impact on users' intention to use mobile banking	0.308	*<.001*	Supported
H2: Perceived ease of use will have a significant positive impact on users' intention to use mobile banking	0.504	*<.001*	Supported
H3: System quality will have a significant positive impact on users' intention to use mobile banking	−0.045	0.37	Rejected
H4: Service quality will have a significant positive impact on users' intention to use mobile banking	0.157	*0.004*	Supported
H5: Information quality will have a significant positive impact on users' intention to use mobile banking	−0.041	0.371	Rejected
H6: Trust will have a significant positive impact on users' intention to use mobile banking	0.018	0.732	Rejected

4.4 The moderation effects

Multiple regression was used to test the influence of moderation on the relationships between related predictors and intention to use mobile banking. For example, age (A) is multiplied by the independent variables included in the model (PEOU, PU, and SERVQ). The same was done with gender (G). Table 6 shows that gender have no effect on the relationships between the predictors and intention to use mobile banking (p > 0.05). However, age have an impact on the relationship between PEOU and ITU (p < 0.05). The other two relationships were not influenced by age.

Table 6 The moderation effect test

Constructs	Unstand. coeff.		Stand. coeff.	t	Sig.
	B	Std. error	Beta		
Perceived usefulness (PU)	0.318	0.055	0.308	5.829	<.001
Perceived ease of use (PEOU)	0.462	0.054	0.504	8.631	<.001
Service quality (SERVQ)	0.153	0.052	0.157	2.929	0.004
PEOU*G	0.267	0.176	0.784	1.519	0.13
SERVQ*G	−0.035	0.145	−0.098	−0.24	0.811
PU*G	−0.222	0.179	−0.672	−1.241	0.216
PEOU*A	0.159	0.041	0.931	3.884	<.001
SERVQ*A	−0.068	0.035	−0.405	−1.944	0.053
PU*A	−0.03	0.039	−0.178	−0.768	0.443

5 Conclusions

This study utilised an online survey to measure subjects' responses regarding items measuring the factors influencing the intention to use mobile banking in Qatar. Results indicated that PU, PEOU and service quality are significant predictors of ITU. System quality, information quality and trust, on the other hand, have no significant impact intention to use mobile banking. The model explained 70.7% of the variance in intention to use M-banking. Furthermore, all statistics components and model parameters values of the TAM and ISSM theory may be confirmed as plausible and predictive in a Qatari environment. The constructs developed by the modified TAM and ISSM models were sufficient to explain intention to use mobile banking in Qatar. A more thorough theoretical view of intention to use mobile banking in Qatar was provided by extending the modified two models to include one extra variable. Age and gender failed to moderate the relationships between the significant predictors and ITU except for age which influenced the relationship between PEOU and ITU.

5.1 Implications for practice

The results of this study can help a variety of banking institutions better understand the elements that influence intention to use mobile banking in Qatar. The primary goal of this study, from a practical standpoint, is to ensure that any IS model is more beneficial for the community. This can only happen if IS model is utilised on a regular basis (Bhattacherjee, 2001; Tella, 2012; Veeramootoo et al., 2018). This paper provides a clear

picture of the primary elements that influence whether people will use mobile banking or not. The results of this study may be valuable to bank policymakers, who can utilise them to improve their internet banking channels to encourage continuous use. The data suggest that SERVQ, PEUO, PU are the most important predictors of intention to using mobile banking.

The findings of this paper have ramifications for both research and practice. On the practical view, the outcomes reveal that Qatari users are keen on the ease and usefulness of mobile applications. It looks like they trust the bank to act in their best interests, where trust was not a critical factor in adopting mobile banking. In addition, mobile banking is predicted to attract more technologically aware clients, resulting in a rise in customer base, revenue, and profitability. Even though ATMs, phone, and internet banking are the most common channels for completing personal financial transactions today, mobile banking is predicted to become a future banking service channel. Banks, on the other hand, must provide more mobile banking services and raise customer awareness to new and improved services. This can be accomplished by placing advertisements on their websites, in newspapers, on social media, on television, or via SMS messages, which can be an effective approach to promote the usage of mobile banking services. As a result, enhanced marketing efforts, particularly through advertising, will assist banks in raising customer awareness and attracting more customers to adopt mobile banking services.

Service quality (SERVQ) is an important factor in deciding whether to use mobile banking or not. Thus, banks should focus on the demands of their customers, provide timely and dependable services, and demonstrate appropriate knowledge, personal care, and attention. As a result, continuous use of mobile banking services will be encouraged. Banks in Qatar must prioritise service quality to earn clients' trust. Consumers must feel secure when conducting online purchases. Furthermore, because user satisfaction is a significant aspect, banks in Qatar must personalise services and administer them effectively to achieve customer contentment and encourage them to use mobile banking.

5.2   Limitations

Although this work adds to the field's theoretical and practical knowledge, it does have several limitations that should be noted by future researchers. First, the gender distribution of the sample was unbalanced, since the majority of the respondents were females, while males were poorly represented. According to the statistics, the majority (n = 193, 67%) were female and (n = 95, 33% were Males respondents. The research was limited to Qatar, and the time was short to get more respondents. As a result, the findings of the study may not be appropriate to other countries. Thus, subsequent longitudinal investigations can be done to improve the study's validation.

Third, this study does not consider factors outside the TAM and ISSM models, such as risk, security, ubiquity, convenience, attitude, or can be add more moderate variables like experience or user involvement. Future research will need to look at the impact of intention to use mobile banking while considering moderating parameters including age, gender, experience, or user involvement, should be investigated to see if they influence the intention to use mobile banking. This paper's research model served as a foundation for additional research and improvement of TAM and ISSM models.

Moreover, this study had a cross-sectional time horizon. This means that each participant's data was only collected once (Orlikowski and Baroudi, 1991). Unlike in longitudinal studies, the researcher is unable to replicate the findings, which may reduce

the reliability of the results (Orlikowski and Baroudi, 1991). The importance of conducting longitudinal studies in this type of research stems from the fact that consumer habits change over time because of changes in technological services (Venkatesh and Davis, 2000). Future studies should use longitudinal studies to re- collect the findings. As a result, future research will be motivated to re-examine the critical role of trust, system quality, and information quality for further investigation. Future research should consider the significant impact of culture in this regard. Indeed, culture has greatly influenced customers' perceptions, attitudes, habits, and behaviour toward new systems (i.e., Al-Gahtani et al., 2007; Lee et al., 2007; Zhang et al., 2018). As a result, researchers could see the nature of Qatari culture and how it could moderate the impact of key predictors of mobile banking adoption and loyalty.

5.3 *Future studies*

Considering the research findings, debate, and research limitations indicated earlier, a list of future investigations, both inside and outside Qatar, are suggested to investigate the context influence. First, new researchers can concentrate on the three primary variables which are PU, PEUO, SERVQ, where they can provide a variety of different area to evaluate. New researchers are urged to apply the same conceptual model to a variety of GCC nations to develop a broad range of comparisons and demonstrate optimal practices. Also, from both a theoretical and practical one, looking at issues other than those we investigated might be advantageous. Future researchers can also do more in- depth analytical tests to reduce the number of variables employed in this study and any constraints or add more variables. Furthermore, we recommend that qualitative research methods be used, as further investigation and studies will assist banks and financial institutions in Qatar in exploring a variety of variables that affect intention to use mobile banking.

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