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Acceptance of mobile banking in Islamic banks: evidence from modified UTAUT model

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Abstract

Purpose – The purpose of this study is to examine the factors which affect mobile banking (M-banking) acceptance in Islamic banks of Pakistan by using the modified unified theory of acceptance and use of technology (UTAUT) model. The performance expectancy, facilitating conditions, social influence, effort expectancy, perceived value, habit and hedonic motivation are taken as independent variables. Similarly, the intention to adopt M-banking is taken as the mediator, and actual usage is used as the dependent variable.

Design/methodology/approach – The data are collected by using the survey method, and the five-point Likert scale is used for this purpose. The statistical techniques applied to the dataset were confirmatory factor analysis and partial least square structure equation modeling.

Findings – The empirical evidence shows that all the variables except for social influence have a significant positive effect on the intention which results in actual usage.

Practical implications – This study will help the Islamic banks in boosting the M-banking growth and decision-makers in crafting those strategies that increase the M-banking acceptance.

Originality/value – This paper makes a unique contribution to the literature with reference to Pakistan, being a pioneering attempt to investigate the factors which affect M-banking acceptance in Islamic banks of Pakistan by using the modified UTAUT model.

Keywords Pakistan, UTAUT2, M-banking, Actual usage

Paper type Research paper

1. Introduction

In the past few years, the organizations have devoted sufficient resources to adopt new technologies. The reason behind this adoption is to achieve a competitive advantage at one end and to attract new customers on the other hand (Oliveira *et al.*, 2014). It is a due fact that the banking sector is among one of the sectors which change drastically because of technological advancement (Frame and White, 2014). This innovation changes the face of the banking industry and brings in new standards which modify the bank's production process and its services (Wada and Odulaja 2012; Frame and White, 2014). The most recent innovation in the financial sector is mobile banking (M-banking) (Shaikh and Karjaluoto, 2015; Mohammadi, 2015). According to the Juniper research (2015), around 1 billion people use the mobile phone devices for banking transactions, and by the year 2020, it will touch the figure of 2 billion.

1.1 What is mobile banking?

M-banking is an interface where the customers can access the banking system by using the mobile phone devices such as smartphones, personal digital assistants (PDAs) and tablets at any time or place (Teo *et al.*, 2012; Oliveira *et al.*, 2014; Alalwan *et al.*, 2016). M-banking

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facilitates the users to carry out financial transactions which include balance inquiries, bill payments, payment transfer and text notifications (Howell and Wei, 2010; Zhou, Lu and Wang, 2010). The M-banking has added flexibility in the banking sector and has given customers a convenient access toward banking services (Mohammadi, 2015). It has improved the financial service execution as well as the client interaction with other social units (Lee *et al.*, 2015). The M-banking facility provides convenience to the customers, while the traditional banks save their clients cost and time which results in more customer satisfaction and loyalty (Alalwan *et al.*, 2015, 2016). Nowadays, the banking business is considered incomplete without M-banking (Wonglimpiyarat, 2014; Mohammadi, 2015).

In the past, many studies have been done in the M-banking adoption context (Luarn and Lin, 2005; Zhou *et al.*, 2010; Gu *et al.*, 2009; Mishra and Bisht, 2013; Lu *et al.*, 2015). Most of the studies explore the factors which affect the M-banking adoption (Al-Jabri and Sohail, 2012; Hanafizadeh *et al.*, 2014; Baptista and Oliveira, 2015; Alalwan *et al.*, 2016) and majority of the studies reported that M-banking acceptance is low (Khan *et al.*, 2008; Awwad and Ghadi, 2010). However, very few studies have been carried out in the context of acceptance of M-banking especially in developing countries (Al-Somali *et al.*, 2009; Afshan and Sharif, 2016; Raza *et al.*, 2017c).

1.2 Mobile banking in Pakistan

Pakistan is among one of the developing economies in which M-banking is widely accepted, though this service was initially introduced in Pakistan in the year 2009. M-banking is considered as the most preferred service among all services offered by the banks (Muhammed *et al.*, 2013; Afshan and Sharif, 2016). According to the annual report published by State bank of Pakistan (2015), the mobile transaction has increased drastically in Pakistan. In 2011, the number of transactions done through M-banking was 3.29 million, and the transaction amount was 8bn. However, the number of transactions declined in the year 2012 by 0.12 million, but the value of transaction increased by 4bn. In 2013-2014, both number and value of transaction increased, whereas in 2015, the number of transactions slightly declined by 0.03 million, but the value of the transactions increased by 39.45 billion.

1.3 Mobile banking and acceptance model

Islamic M-banking services are connected with money transfers, chequebook requests, purchases, payments, checking account balance, transaction alerts, fund monitoring and much more. These Islamic M-banking services can be accessed via mobile devices such as smartphones, tablets, mobile laptop devices, PDAs and other mobile devices. On the other side, conventional M-banking services are also same in nature, but their context is different. For instance, the lottery payments which are managed through M-banking are a form of gambling and strictly prohibited in Islamic laws. Concerned with the customer adoption towards M-banking, majority of the studies have been conducted in the conventional banks (Teo *et al.*, 2012; Baptista and Oliveira, 2015; Afshan and Sharif, 2016) and very limited number of studies have been conducted in the context of Islamic banks, especially in a developing country like Pakistan (Ali and Raza, 2017). In the context of Pakistan, majority of the studies explored the adoption of Islamic banking products, for example, home financing and credit cards (Ali *et al.*, 2015, 2017; Amin *et al.*, 2013, 2014). Therefore, the purpose of this study is to understand the factors that influence the users' intentions toward the Islamic M-banking adoption in Pakistan by using the UTAUT2 model. The argument is that Islamic culture and Muslim religion greatly influence daily life and help in shaping-up the society (Thye Goh *et al.*, 2014). Hence, the present study is an attempt to understand the individual's adoption of Islamic M-banking under the framework of the UTAUT2 model.

1.4 What is Islamic banking?

The basic financial needs of Muslims are fulfilled by the Islamic banks in compliance with *Sharia* (Islamic laws) to enjoy banking services. Islamic banking strictly follows *Sharia* guidelines, namely, Fiqh muamalat (the Islamic rules for transactions). These rules are extracted from the holy book Al-Quran and the Sunnah (teachings, silent permissions, deeds and sayings of the prophet Muhammad P.B.U.H), with other relevant secondary sources, such as a collective agreement among the Islamic scholars (Ijma), personal reasoning (Ijtehad) and the analogy (Qiyas). Based on *Sharia* rules, the financing mode should be based on profit and loss sharing (PLS) basis, which strictly prohibits fixed returns. Islamic banks are sometimes also referred to as conventional banks, because they offer full-service financial intermediary. The Islamic banking transactions are mostly based on Musharaka and Mudaraba. These are considered as Islamic banking products which are debt-like and equity-like contracts (Hamwi and Aylyward, 1999; El-Gamal, 2000). The operations of Islamic banks follow "equity-based system". The main objective of this mode is to provide risk and profit sharing, societal equity and the prohibition of all other transactions which are unacceptable in Islamic rules (Dixon, 1992; Khan and Bhatti, 2008).

In the context of Pakistan, the Islamic banking industry is showing a significant growth by 10 per cent, and as stated by the State bank of Pakistan (2013), it will twofold by the year 2030. The Islamic banking network comprises 22 institutions in which six are operating as full-fledged Islamic banks, whereas 16 conventional banks are having Islamic branches. In terms of branches, 2,226 are operating across different regions of Pakistan. Furthermore, in the overall banking industry, the Islamic banking assets have reached 11.8 per cent, whereas the banking deposits have stood up to 13.3 per cent (Islamic Banking Bulletin, September 2016). The Islamic banks operating in Pakistan offer a wide range of Islamic products and services in the field of investment banking, trade finance, corporate/SME banking, general banking and consumer banking under the guidelines of *Sharia* principles. In terms of financing, different modes are available which include *Murabaha*, *Musharaka*, *Ijara*, Diminishing *Musharaka*, Istisna and Salam (Ali *et al.*, 2015). Overall, Muslims have a strong belief that Islamic banks accelerate the growth of the economy and play a significant role in the well-being of Muslim societies (Khan and Bhatti, 2008).

2. Literature review

2.1 Theoretical background

Venkatesh *et al.* (2003) developed the unified theory of acceptance and use of technology (UTAUT) by combining the eight theories that explain the factors which affect the technology adoption. These theories include theory of reasoned action (TRA), technology acceptance model (TAM), the motivational model, theory of planned behavior (TPB), PC utilization model, social cognitive theory TAM-TPB and innovation diffusion theory (IDT). The model presented by Venkatesh *et al.* (2003) combines the similar concepts of previous theories and introduce four concepts, i.e. performance expectancy (PE), facilitating conditions (FC), social influence (SI) and effort expectancy (EE). These variables get the attention of many researchers and are used widely in exploring the acceptance of technology among individuals (Im *et al.*, 2011, Yu, 2012). Venkatesh *et al.* (2012) extended the UTUAUT model and developed the UTUAT2 which has seven constructs, namely, PE, SI, EE, FC, price value (PV), hedonic motivation (HM) and habit (H). The last three factors were added because of its importance identified by previous scholars (Limayem *et al.*, 2007, Venkatesh *et al.*, 2003; Kim and Malhotra, 2005).

2.2 Development of Hypotheses

2.2.1 Performance expectancy. PE tells the individual that how using technology will improve their performance (Venkatesh *et al.*, 2003). In the M-banking context, it is the individual's belief that using M-banking will improve their banking activities. The individual will use the technology when they have the assurance that it will bring in positive results (Compeau and Higgins, 1995). Park *et al.* (2007) used the data of 221 Chinese nationals and reported that PE impacts the individual intention to use mobile technology. AbuShanab and Pearson (2007) examined the internet banking adoption in Jordan, and identified PE as one of the significant factors that affect the individual's intention. Lu and Yu-Jen Su (2009) used the UTUAT model, and concluded that PE acts as a significant variable that impacts the individual's intention to adopt mobile services. Lai *et al.* (2009) used the extended model of UTAUT and reported that PE affects the individual intention while adopting the mobile commerce. Luo *et al.* (2010) identified PE as the influential factor in the acceptance of M-banking. Mazhar *et al.* (2014) reported that the customers develop positive intention to use the M-banking technology if they can realize the numerous benefits obtained from technology.

The hypothesis used for PE is:

H1. PE has a significant positive effect on individual's intention.

2.2.2 Effort expectancy. EE tells that how easy it is for the individual to operate the technology (Venkatesh *et al.*, 2003). In the M-banking context, it tells the individual the ease of operating M-banking. According to Koenig-Lewis *et al.* (2010), the easiness of technology increases its adoption rate. If the users discover M-banking effortless, it will increase their willingness to do banking transactions (Lin, 2011). According to the study of Mazhar *et al.* (2014), if the M-banking applications provide a user-friendly interface, or if the customer perceives it easy, it will create the positive attitude towards the technology, and ultimately result in the adoption of M-banking technology. Amin *et al.* (2008) examined the association between the perceived ease of use and intention to use M-banking services and reported that significant association exists between the two variables. Jeong and Yoon (2013) also examined the acceptance of M-banking services and reported that EE influences the user intention to adopt it. Govender and Sihlali (2014) used the extended TAM model to investigate the M-banking adoption among university students and found that perceived ease of use affect their intention to adopt it. Rawashdeh (2015) examined the adoption of e-learning and reported that perceived ease of use significantly influences the individual intention. Kishore and Sequeira (2016) studied the adoption of M-banking service in Karnataka and identified EE as an important determinant. On the contrary, Amin *et.al.* (2012) examined the factors that affect the M-banking adoption and reported that perceived ease of use does not affect the individual intention to adopt it. The similar result is also reported by the Phonthanukitithaworn *et al.* (2016). The hypothesis used is:

H2. EE has a significant positive effect on individual's intention.

2.2.3 Social influence. According to Venkatesh *et al.* (2003), it is the individual's belief how their relatives feel if they adopt the technology. In the M-banking context, it is the individual's perception that how their relatives react if he/she uses the M-banking. The opinion of relatives has an impact on the acceptance of M-banking (Hong *et al.*, 2008). According to Riquelme and Rios (2010), social influence significantly affects the individual's willingness to use internet banking in Singapore. Püschel *et al.* (2010) identified social influence as a critical factor which affects the individual intention to use M-banking in Brazil. Echchabi and Aziz (2012) study the willingness of the customers toward Islamic

banking in Morocco and reported that subjective norms affect the customer intention to adopt it. Kaabachi and Obeid (2014) explored the factors that affect the Islamic banking adoption in the Tunisia and reported that social influence does not affect the customers' intention to use it.

Ali *et al.* (2015) use the TRA and studied the Islamic credit card adoption in the banking users of Pakistan. The result shows that subjective norm has a positive and significant effect on the individual intention to adopt it. Reni and Ahmad (2016) also applied the TRA to investigate the Islamic banking adoption in Indonesia and reported that subjective norm has a significant effect on the customer intention. Jaffar and Musa (2016) examined the factors that affect the adoption of Islamic financing by using the data of 205 entrepreneurs and identified subjective norm as a significant determinant that affects the individual intention. The hypothesis used to explain social influence is:

H3. SI has a significant positive effect on individual's intention.

2.2.4 Facilitating conditions. Facilitating conditions are the technical support available to the individual during technology usage (Venkatesh *et al.*, 2003). To adopt M-banking, an individual requires skills, mobile phone, internet connection, and security. The better the FC available to the user, the more will be their willingness to accept the technology (Baptista and Oliveira, 2015). Crabbe *et al.* (2009) studied the M-banking adoption in Ghana and reported that FC affects the individual willingness to adopt it. Zhou *et al.* (2010) integrated the tasktechnology fit (TTF) and the unified theory of acceptance and usage of technology (UTAUT) model to examine the M-banking adoption. They concluded that FC has a significant effect in shaping customer's intention to adopt M-banking. Nisha (2016) studied the factors that affect the user's intention to adopt M-banking and reported that FC influences the user's intention to use it. Alalwan *et al.* (2017) studied the M-banking adoption in the customers of Jordanian banks and reported that FC significantly influenced the behavioral intention. Islam (2017) applied the UTAUT model to examine the mobile internet usage among youth and identified FC as a significant predictor. However, opposite result was found in the study of Bhatiasevi (2015). The study reported that FC does not create any impact on the intention of the individual to adopt m-banking. The hypothesis for FC is:

H4. FC has a significant positive effect on individual's intention.

2.2.5 Hedonic motivation. It is the feeling or emotion stimulated by using the technology (Venkatesh *et al.*, 2012). In the M-banking context, it is the pleasure or fun the individual achieves by using the M-banking (Venkatesh *et al.*, 2012). Moreover, Venkatesh *et al.* (2012) also concluded that direct association exists between the HM and individual intention to use technology. The studies of Van der Heijden (2004), Hwang and Kim (2007) reported that motivation plays a significant role in the acceptance of the technology. The greater the enjoyment the M-banking brings the better will be its chances of acceptance by the clients (Zhang *et al.*, 2012). Baptista and Oliveira (2015) investigated the M-banking adoption in African countries and reported that HM influences the individual intention to adopt it. Alalwan *et al.* (2015) studied the adoption of internet banking in Jordan and reported that HM has a significant effect on behavioral intention. Alalwan *et al.* (2016) examined the adoption of telebanking in Jordanian customers and reported HM helps in shaping the customers' decision to adopt it. Alalwan *et al.* (2017) studied the adoption of M-banking in Jordan and reported that HM influences the intention of the users to adopt it. The hypothesis for HM is:

H5. HM has a significant positive effect on individual's intention.

2.2.6 Price value. According to Venkatesh *et al.* (2012), it is the tradeoff between the benefits and the monetary cost attached to the usage of M-banking. The cost attached to M-banking usage includes internet charges, bank service charges and transaction charges. The positive PV of M-banking means that the benefits should be more than the monetary cost (Baptista and Oliveira, 2015). The perceived cost has a significant effect on the mobile commerce adoption (Hong *et al.*, 2008; Shin, 2009).

Cruz *et al.* (2010) identified perceived risk and the internet access cost as the two main factors which affect the individual's intention to use M-banking. Ho and Ko (2008) examine the factors that cause the continue internet usage among customers and reported perceived value shapes the customers' intention to use it. Yang (2009) reported that adoption of M-banking services is dependent on its cost and concluded that lower cost has a positive influence on the users to adopt M-banking. The studies of Luarn and Lin (2005) and Yu (2012) reported that the customer willingness to adopt M-banking is highly dependent on the budget constraints. Govender and Sihlali (2014) identified perceived value as a significant factor that affects the individual intention to use M-banking. Thye Goh *et al.* (2014) also reported that the more value the customer perceives from the system, the more likely would be its adoption towards the Islamic M-banking. Thus, the hypothesis for PV is:

H6. PV has a significant positive effect on individual's intention.

2.2.7 Habit. Habit is the repeated action which is based on individual's knowledge and experiences (Venkatesh *et al.*, 2012). It is considered as an alternative factor which creates hurdles in the technology acceptance (Venkatesh *et al.*, 2003). The positive relation is reported among habit, intention to use and actual usage by Venkatesh *et al.* (2012).

Kolodinsky *et al.* (2004) examine the adoption of electronic banking among US customers and reported that habits affect the individual decision to use it. Kim and Malhotra (2005) examined the factors that affect the continuance use of information system (IS) and identified habit as a significant factor that affects the users' intention to use the technology. The similar result is reported by Limayem *et al.* (2007). Liao *et al.* (2006) examined the role of habit in the adoption of e-commerce and reported that habit influences the customer's intention to adopt it. Luo *et al.* (2010) studied the adoption of M-banking and reported that habit affects the customer willingness to adopt it. Eriksson *et al.*(2008) studied the adoption of internet banking in Estonia and also reported the significant association between the habit and intention to use it. Baptista and Oliveira (2015) studied the M-banking adoption and identified habit as a significant variable that influences the customer's intention to use it. The hypothesis for habit is:

H7. Habit has a significant positive effect on individual's intention.

2.2.8 Behavioral intention. Behavioral intention is the individual's willingness to adopt new technology (Tsai, 2012). Actual behavior can be gauged through intentions (Webb and Sheeran, 2006), and considered as an important variable in acceptance of technology (Irani *et al.*, 2009). In the past, many studies have considered behavioral intention as an important factor in determining the acceptance of the technology (Park, 2009; Teo, 2011). According to the studies of Cunningham *et al.* (2005) and Lapointe and Rivard (2005), the intention to use technology varies and highly depends on the features of the technology. Venkatesh *et al.* (2003) concluded that behavioral intention has a significant effect on the usage of technology. In the studies related to IS adoption, the behavioral intention plays a significant role (Chang *et al.*, 2007; Zhou *et al.*, 2010; Raza and Hanif, 2013). The hypothesis for this is:

H8. Behavioral intention has a significant effect on actual usage of M-banking.

2.2.9 Actual usage. Actual usage is the individual's willingness to accept or reject the technology (Straub, 2009). There are numerous factors that change the individual's decision to use technology (Venkatesh *et al.*, 2003). The acceptance of technology can be determined by intention of the individual (Ajzen and Fishbein, 1980). The study of Yu (2012) reported that intention has a significant positive association with actual usage.

3. Methodology

3.1 Research model

The conceptual model of our study is illustrated in Figure 1. The model demonstrates the effect of UTAUT2 constructs that are PE, EE, social influence, FC, HM, perceived value and habit on the actual usage of Islamic M-banking, whereas intention acts as a mediator in this framework.

3.2 Data collection and instrumentation

The Islamic banking in Pakistan comprises 22 institutions in which six are operating as full-fledged Islamic banks, whereas 16 conventional banks are having Islamic branches. In terms of branches, 2,226 are operating across different regions of Pakistan. Furthermore, in the overall banking industry, the Islamic banking assets have reached to 11.8 per cent, whereas the banking deposits are stood up to 13.3 per cent (Islamic Banking Bulletin, September 2016). Thus, data were collected in Pakistan and the targeted population was the users of Islamic banks. In total, 250 respondents participated and after data screening, 28 responses were deleted because of incomplete or missing values. The final sample size used in the study was 229. The sample size is based on reporting of many researchers who stated that three or more items per variable and a sample size of 100 is enough for convergence. According to Anderson and Gerbing (1984), the sample size of 150 is sufficient for a convergent and proper solution. For structural equation modeling (SEM) technique, Churchill and Iacobucci (2010) reported that it can perform well even on the samples of 50-100. Therefore, the sample size of our study is enough to perform estimations.

In the past, the technology acceptance studies have been done through a survey (Venkatesh *et al.*, 2003), the data for this study are also collected through a survey questionnaire. The questionnaire was based on a five-point Likert scale from strongly disagree (1) to strongly agree (5). On the basis of the research model, the questionnaire was created in English and reviewed by the group of researchers for the purpose of content validity. The questionnaire comprises three sections: constructs of UTAUT2, behavioral intention and actual usage. The items of all the three variables were adapted

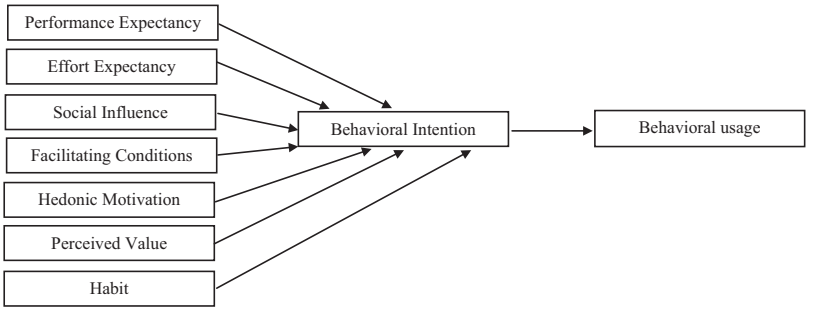

Figure 1. Conceptual framework

from Baptista and Oliveira (2015). Furthermore, the convenience sampling approach was used for the purpose of data collection which is in accordance with the studies of Wu and Wang (2005) and Chen (2008). Throughout the data collection process, all respondents were requested to participate voluntarily, and assurance was given that their information will be kept confidential. In this study, the impact of independent variables (UTAUT2, intention) on the dependent variable (actual usage) was observed.

4. Data analysis

SEM is a technique used to assess the theory's validity with the help of statistical facts (Ringle *et al.*, 2005). The two methods usually used are covariance-based and variance-based. In this study, the variance-based method, i.e. PLS-SEM, is used to evaluate the hypothetical model. The PLS-SEM is performed with the SmartPLS 3.2.3 software (Ringle *et al.*, 2014), and a bootstrap resampling of 5,000 subsamples was used (Hair *et al.*, 2011; Raza *et al.*, 2017a, 2017b). PLS (SEM) is considered suitable for several research situations (Henseler *et al.*, 2009) and complicated models (Chin, 1998a, 1998b). Moreover, this method has minimum restrictions related to sample size and residual distributions in comparison to other covariance-based techniques (Chin, 1998a, 1998b). The estimation was based on the guidelines of Anderson and Gerbing's (1988) two-step approach, and done in two steps. In step one, the reliability and validity of the model have been assessed, and in step two, the assessment of structured model and hypotheses were tested.

4.1 Measurement model

The competency of the model is evaluated by the construct reliability, individual item reliability, convergent validity and discriminant validity.

As seen in Table I, all the variables have Cronbach's alpha and composite reliability greater than 0.7, which meets the criteria of Straub (1989). The individual reliability of all the variables is greater than 0.7 which is in accordance with the criteria given by Churchill (1979). According to him, each loading should be higher than 0.7, and the loadings that are below 0.4 should be eliminated. The items EE1 and FC4 are dropped because of low factor loading. The loading above 0.7 confirms the instrument reliability. The convergent validity was evaluated through average variance extracted (AVE), and all variables have a minimum value of 0.50 which meets the benchmark proposed by Fornell and Larcker (1981).

The discriminant validity was assessed after the convergent validity by using cross-loading analysis and AVE. Table II represents the square root of AVE in the diagonal form and satisfies the criteria of Fornell and Larcker (1981) that AVE should be higher than the correlation between the variables. As seen from Table III, the individual items of each construct are loaded higher in their relevant constructs compared to the other constructs, and the cross-loading difference is also higher than the recommended criteria of 0.1 (Gefen and Straub, 2005; Qazi *et al.*, 2016), which explains the discriminant validity adequacy. Furthermore, Table IV shows that the heterotrait–monotrait ratio of correlations (HTMT) shows that none of the HTMT criteria are higher than 0.85 (Henseler *et al.*, 2015; Raza *et al.*, 2018).

As the measurement model confirms the convergent and discriminant validity, it confirms the variable distinctiveness and can be used to examine the structural model.

4.2 Structural model

The structural model was analyzed by examining the standardized paths. Each path corresponds to a hypothesis. The hypothesis is tested on the basis of the sign, size and

Constructs	Items	Loadings	Cronbach's α	Composite reliability	AVE
Behavioral intention	BI1	0.8250	0.8100	0.8880	0.7260
	BI2	0.8580			
	BI3	0.8720			
Effort expectancy	EE2	0.8670	0.8220	0.8920	0.7350
	EE3	0.8450			
	EE4	0.8590			
Facilitating conditions	FC1	0.7980	0.6800	0.8220	0.6090
	FC2	0.7810			
	FC4	0.7620			
Habit	HB1	0.9110	0.9040	0.9330	0.7760
	HB2	0.8530			
	HB3	0.8720			
	HB4	0.8870			
Hedonic motivation	HM1	0.9120	0.8670	0.9160	0.7850
	HM2	0.8970			
	HM3	0.8520			
Performance expectancy	PE1	0.8110	0.7920	0.8640	0.6160
	PE2	0.8320			
	PE3	0.8030			
	PE4	0.6930			
Price value	PV1	0.8120	0.8220	0.8800	0.6490
	PV2	0.8110			
	PV3	0.8170			
	PV4	0.7850			
Social influence	SI1	0.8920	0.8420	0.8880	0.7360
	SI2	0.9460			
	SI3	0.7500			
Usage behavior	UB	1.0000	1.0000	1.0000	1.0000

Table I. Measurement model results

	BI	EE	FC	HB	HM	PE	PV	SI	UB
BI	*0.852*								
EE	0.371	*0.857*							
FC	0.391	0.589	*0.78*						
HB	0.335	−0.047	0.002	*0.881*					
HM	0.311	0.007	0.076	0.572	*0.886*				
PE	0.379	0.561	0.481	−0.044	−0.031	*0.785*			
PV	0.362	0.37	0.47	−0.02	0.043	0.31	*0.806*		
SI	−0.183	−0.045	−0.096	−0.521	−0.525	−0.066	0.023	*0.858*	
UB	0.313	0.27	0.265	0.285	0.121	0.301	0.117	−0.035	*1.00*

Notes: BI = behavioral intention; EE = effort expectancy; FC= facilitating conditions; HB = habit; HM= hedonic motivation; PE = Performance Expectancy; PV = Perceived Value; SI = social influence. The diagonal elements (italic) represent the square root of AVE (average variance extracted)

Table II. Correlation matrix

statistical significance of the coefficient between each latent variable (LV) and dependent variable. The higher the coefficient value, the stronger is the impact of LV on the dependent variable. The hypotheses are considered on the significance level of 0.1. Results are shown in Table V. All the variables (PE, EE, FC, HB, HM and PV) except SI were found to have a significant positive effect on behavioral intention, and thus supports *H1*, *H2*, *H4*, *H5*, *H6* and

	BI	EE	FC	HB	HM	PE	PV	SI	UB
BI1	*0.8250*	0.3290	0.3580	0.2390	0.2210	0.3540	0.2070	−0.0680	0.3530
BI2	*0.8580*	0.3100	0.3420	0.2520	0.2250	0.3500	0.4180	−0.1880	0.2060
BI3	*0.8720*	0.3080	0.3000	0.3640	0.3460	0.2670	0.3040	−0.2120	0.2370
EE2	0.3130	*0.8670*	0.4760	−0.0430	0.0180	0.4920	0.3200	−0.0030	0.3190
EE3	0.2700	*0.8450*	0.4930	−0.1630	−0.1150	0.5300	0.2320	0.0820	0.2310
EE4	0.3590	*0.8590*	0.5400	0.0550	0.0860	0.4340	0.3800	−0.1600	0.1550
FC1	0.3150	0.5070	*0.7980*	−0.0880	−0.0110	0.4100	0.3440	−0.0680	0.2190
FC2	0.2660	0.4830	*0.7810*	0.1110	0.1120	0.4030	0.2580	−0.1580	0.2580
FC4	0.3270	0.3940	*0.7620*	−0.0020	0.0840	0.3190	0.4780	−0.0140	0.1520
HB1	0.3180	−0.0260	0.0420	*0.9110*	0.4840	−0.0530	0.0040	−0.4230	0.2530
HB2	0.2450	−0.0790	−0.0150	*0.8530*	0.5070	−0.0560	−0.0120	−0.4360	0.1660
HB3	0.3000	−0.0520	−0.0350	*0.8720*	0.5190	−0.0270	−0.0080	−0.5100	0.2780
HB4	0.3090	−0.0170	0.0080	*0.8870*	0.5110	−0.0220	−0.0540	−0.4690	0.2910
HM1	0.3340	0.0470	0.1350	0.4890	*0.9120*	−0.0500	0.0810	−0.4290	0.1500
HM2	0.2540	0.0320	0.0480	0.5080	*0.8970*	0.0220	0.0180	−0.4810	0.0910
HM3	0.2160	−0.0880	−0.0130	0.5430	*0.8520*	−0.0530	−0.0050	−0.5130	0.0620
PE1	0.3270	0.4750	0.3890	0.0320	*0.0550*	0.8110	0.1420	−0.1700	0.2670
PE2	0.3410	0.4770	0.3860	−0.0560	−0.0680	*0.8320*	0.3530	0.0000	0.2820
PE3	0.2530	0.4480	0.3870	−0.0750	−0.0510	*0.8030*	0.2470	−0.0190	0.1840
PE4	0.2560	0.3510	0.3530	−0.0520	−0.0430	*0.6930*	0.2290	−0.0050	0.1950
PV1	0.3470	0.2440	0.3340	0.1140	0.2170	0.1610	*0.8120*	−0.1170	0.0780
PV2	0.2890	0.2470	0.3650	−0.0210	−0.0190	0.2040	*0.8110*	0.0430	0.1450
PV3	0.2580	0.3470	0.4990	−0.1490	−0.0350	0.3230	*0.8170*	0.1300	0.0740
PV4	0.2530	0.3840	0.3380	−0.0540	−0.0850	0.3520	*0.7850*	0.0600	0.0790
SI1	−0.1300	−0.0180	−0.0270	−0.4980	−0.4870	−0.0260	0.0750	*0.8920*	−0.0310
SI2	−0.2130	−0.0910	−0.1680	−0.4470	−0.5040	−0.0940	−0.0260	*0.9460*	−0.0250
SI3	−0.0880	0.0510	0.0270	−0.4540	−0.3480	−0.0240	0.0510	*0.7500*	−0.0470
UB	0.3130	0.2700	0.2650	0.2850	0.1210	0.3010	0.1170	−0.0350	*1.0000*

Table III.
Loadings and cross loadings

Notes: BI = behavioral intention; EE = effort expectancy; FC= facilitating conditions; HB = habit; HM= hedonic motivation; PE = performance expectancy; PV = Perceived Value; SI = social influence. All self-loadings are significant (italics)

	BI	EE	FC	HB	HM	PE	PV	SI	UB
BI									
EE	0.448								
FC	0.522	0.787							
HB	0.388	0.119	0.148						
HM	0.359	0.118	0.13	0.654					
PE	0.467	0.696	0.659	0.09	0.083				
PV	0.437	0.45	0.622	0.128	0.158	0.398			
SI	0.2	0.138	0.176	0.613	0.61	0.102	0.142		
UB	0.346	0.302	0.326	0.295	0.122	0.331	0.129	0.043	

Table IV.
HTMT results

Notes: BI = behavioral intention; EE = effort expectancy; FC= facilitating conditions; HB = habit; HM= hedonic motivation; PE = performance expectancy; PV = Perceived Value; SI = social influence

H7. On the contrary, SI creates an insignificant effect on behavioral intention and rejects *H3*. The impact of behavioral intention on actual usage is also found to be significant, and hence supports *H8*. Overall, out of the eight hypotheses, seven were accepted (Table V and Figure 2).

5. Discussion of the results

The major objectives of the study are supported by the results. The results show the good measurement and structural model, and support the seven hypotheses out of eight. The path between the PE and behavioral intention is significant, and positive, $p < 0.1$ and $\beta = 0.2180$. The relationship between the PE and BI is consistent with the past literature (Zhou *et al.*, 2010, Baptista and Oliveira, 2015; Oliveira *et al.*, 2014). The result indicates that if M-banking improves the customer's performance, they will opt for these services (Ghalandari, 2012; Yu, 2012).

H2 is also supported and shows a significant and positive association ($p < 0.1$, $\beta = 0.1260$). The result is supported by the studies of Carlsson *et al.* (2006); Im *et al.* (2011) and Venkatesh *et al.* (2012). This indicates that if an individual thinks it is easy to operate, and does not require instructions, it will create intention and results in actual usage (Lin, 2011; Ghalandari, 2012).

H3 shows the insignificant positive relationship ($p > 0.1$, $\beta = 0.082$). The studies which support this relationship include Kim *et al.* (2009), Wang and Yi (2012) and Baptista and Oliveira (2015). The logic behind this association is that M-banking is a very personal and

Hypothesis	Regression path	Effect type	SRW	Remarks
H1	PE → BI	Direct effect	0.218***	Supported
H2	EE → BI	Direct effect	0.126*	Supported
H3	SI → BI	Direct effect	0.082	Un-supported
H4	FC → BI	Direct effect	0.115*	Supported
H5	HM → BI	Direct effect	0.167**	Supported
H6	PV → BI	Direct effect	0.194**	Supported
H7	HB → BI	Direct effect	0.309***	Supported
H8	BI → UB	Direct effect	0.313***	Supported

Notes: SRW = Standardized regression weight; ***$p < 0.01$; **$p < 0.05$; *$p < 0.10$

Table V.
Path analysis

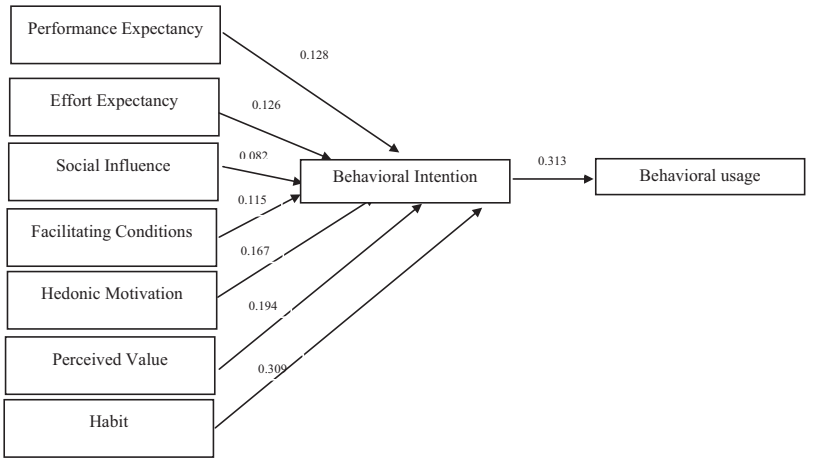

Figure 2.
Results of path analysis

sensitive matter, so any force or influence by the person is overshadowed by the need to keep the financial dealings and data confidential and protected (Oliveira *et al.*, 2014).

The path between the FCs and behavioral intention was significant and positive and hence supported the hypothesis ($p < 0.1$, $\beta = 0.1150$). The results are consistent with the work of Zhou *et al.* (2010), Yu (2012), Miltgen *et al.*(2013) and Oliveira *et al.*(2014). The result implies that if the users are provided with the essential infrastructure, and technical support, this will result in the M-banking acceptance (Oliveira *et al.*, 2014).

The association between the HM and behavioral intention was also found positive and significant ($p < 0.1$, $\beta = 0.1670$). The studies which also support our results include Venkatesh *et al.*(2012), Raman and Don (2013) and Baptista and Oliveira (2015). This implies that if M-banking usage brings in positive emotions or feelings in the individual, it will increase their engagement (Revels *et al.*, 2010).

H6 is also found positive and significant ($p < 0.1$, $\beta = 0.1940$). The results are in accordance with the studies of Luarn and Lin (2005); Venkatesh *et al.* (2012). If the individual identifies that usage of M-banking saves time, and reduces the transaction cost, this will result in the creation of intention, and will eventually lead to the actual usage (Akturan and Tezcan, 2012).

The path between the habit and behavioral intention was significant and positive, and hence, supported the hypothesis ($p < 0.1$, $\beta = 0.3090$). The results are in accordance with the work of Venkatesh *et al.* (2012); Baptista and Oliveira (2015). This implies that customer habits play an important role in increasing their actual behavior towards M-banking. Venkatesh *et al.* (2012) also reported habit as a significant predictor of individual intention and behavior.

H7 is also supported and shows that behavioral intention has a significant positive effect on the actual usage of the technology ($p < 0.1$, $\beta = 0.3130$) which is supported by the studies of Dwivedi *et al.* (2009) and Teo (2011). This implies that behavioral intention actually leads to the usage of technology (Teo *et al.*, 2008).

6. Conclusion and managerial implications

M-banking is now a well-developed concept and has high market potential, but its acceptance level is low. This study examines the acceptance of Islamic M-banking in Pakistan by using the UTAUT2 model. The PLS-SEM was applied to a sample of 229 respondents. The result indicates the good model and confirms the acceptance of seven hypotheses out of eight. Moreover, all the paths show a significant positive association with behavioral intention, except for social influence.

From the practical perspective, our study showed that all the variables of UTAUT2, expect social influence, have a significant effect on the individual's acceptance of Islamic M-banking. The M-banking service providers should provide different services in accordance with the needs of the users, as the users are more concerned with the usage cost, whereas the working professionals are more focused on reliable and easy banking services. If the service providers provide services according to the need of the individuals, this will improve the adoption of the M-banking. In addition, they should also improve the PE and EE by giving user-friendly interface. The interface with the help option, high-security network, handy and accessible resolver reduces the users' EE and increases the PE which ultimately results in M-banking adoption. Moreover, the banking should continue informing their customers about the convenience, usefulness and the advantages of using the M-banking services.

The financial institutions should highlight the benefits of Islamic M-banking through marketing campaigns, ensuring that by using these services the individual's experiences will be enhanced. To improve the FCs, the banking sectors should provide micro-support

agents on sites, 24/7 call centers and trained professionals who always offer a helping hand because by improving the FCs the financial institutions can increase the adoption of the Islamic M-banking. The financial institutions should increase the HM by giving some monetary benefit on the usage of M-banking again and again, as this will improve the customers' motivation and habits, and increase their willingness to adopt Islamic M-banking.

6.1 Conclusion and recommendations

The banks to increase the perceived value among the customers should convince them that by opting the M-banking will result in saving their time, cost and efforts. Moreover, reducing the service charges or making services free of cost can be another tactic of increasing the perceived value which will ultimately result in customer intention to opt it. Thus, for the continuance usage of M-banking by the users, it is recommended that the banks should establish a feedback system in which the users are asked to share their views related to any system imperfection or any issue they face while using it. Moreover, the usage of M-banking by the customer can also be ensured by delivering high values in comparison to others.

Concerned with societal implications of our research, we are certain that this research will provide support to policymakers and regulators to develop strategies for the advancement of society and industry. To enable two-sided markets, this study also offers guidelines for the telecommunication industry. This will help regulators to be more specific in providing solutions to consumers. This includes availability of single platform for both consumers to perform convenience for their online transactions, decrease in psychological and economic switching costs for consumers and opportunities for new entrants in the market which may have significant impact of reinforcing on existing operators to provide more options for consumers.

In sum, our study suggests relevant societal implications to bridge between consumer behavioral intentions and banks in the context of M-banking. Therefore, this research delivers optimal solutions for authorities to understand the emergence of M-banking in the society and industry.

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