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Article

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Exploring Gender Effects in Intention to Islamic Mobile Banking Adoption: an empirical study

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ABSTRACT

This study is aimed to explore the gender effects in the intention to adopt Islamic mobile banking. Data was analyzed using structural equation modeling (SEM) methodology on 243 participants from Pakistan. In the findings, researchers identified two different models for intention to adopt Islamic mobile banking. It is inferred that males are more task driven and desire for personality, value and status, so their intention is significantly impacted by perceived usefulness and perceived self-expressiveness. Whereas, females have found lack of IT knowledge and trust, therefore, their intention is significantly impacted by perceived credibility. Further, the perceived financial cost was found of no concern for both males and females and social norms influenced the adoption but there existed no significant gender differences. Managerial and practical implications along with limitations and future research suggestions of the study are also discussed.

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1. Introduction

Despite the sluggish outlook for global banking industry, the Islamic banking is fast growing industry. According to recent report by [Ernst and Young \(2012\)](#) titled, "World Islamic Competiveness Report", the global Islamic finance industry has been reported 16% of compound annual growth rate from 2010 to 2014, regardless of economic and political volatility in its major regions. Islamic banking has become a huge industry and its assets reported in 2014 are estimated to USD 1.87 trillion. The operations of Islamic banking are based on distinct value based system that safeguard the material and moral welfare of both the individuals and the society. The model of Islamic banking follows Shari'ah compliance derived from the Holy Quran which forbids the Islamic banks to invest in toxic assets. Because of this bar, Islamic banks were not severely impacted by the recent financial crisis ([Hasan and Dridi, 2010](#)). This further caught attention of many investors and customers and encouraged the acceptance of Islamic banking. In order to compete with the conventional banking, Islamic banks are installing themselves with innovative technologies to gain competitive edge and

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market share (Goh & Sun, 2014; Sadeghi & Hanzae, 2010; Sun, Goh, Fam, Xue, & Xue, 2012). One of the latest invention is mobile banking (m-banking) which is the use of mobile phones to conduct financial transaction (Yu, 2012). With the diffusion of wireless access protocol (WAP), introduction of 3G and 4G technologies individuals' life style has switched as round the clock connectedness become inevitable (Ha, Canedoli, Baur, & Bick, 2012). This life style shift has made commercial opportunities for the banks to offer high value m-banking services (Goh & Sun, 2014). m-Banking eliminates the conventional banking limitation of time and place (Lin, 2013). Islamic banks must develop a deep understanding of all the factors affecting the m-banking adoption process, as many of the technology adoption barriers like cost, access and service quality has been greatly reduced. Such present alterations in consumer lifestyle propose the need to reinvestigate, in new context, the individual perceptions about Islamic mobile banking. As the new context may change the already theorized relationship insignificant and probably may establish new relation (Johns, 2006).

Prior studies have incorporated that gender effect exists with the adoption of new technology such as information communication technology (Dewan, 2010; Nysveen, Pedersen, & Thorbjørnsen, 2005; Riquelme & Rios, 2010; Venkatesh & Morris, 2000; Yu, 2012). Sohn and Lee (2007), in the framework to adopt mobile services, stated gender effect that females, because of willingness and self-presentation, are more persuaded to adopt text messages than males. In his study, Yu (2012) found that male have more concern about perceived financial cost than females. In other studies, authors have highlighted the importance of m-banking and suggested to further explore the role of gender in intention to adopt m-banking (Dewan, 2010; Riquelme & Rios, 2010). The above mentioned studies validated the effect of gender in adoption behavior but this effect is not fully explore when it comes to Islamic mobile banking. Due to this highlighted significance of the said phenomenon, further investigation in this area needs considerable attention. Therefore, the present study fills the gap by in two ways. First, the extant research on mobile banking has largely applied technology acceptance model on traditional banking overlooking the significant ethnic group, the Muslims, who prefer Islamic banking. Second, the present study purposefully includes gender to the see how gender differences vary in intention to adopt Islamic mobile banking which is not often considered in prior studies. The study provides managerial implications for designing effective marketing strategies and understanding the important role of gender in providing customer's satisfaction. The findings revealed higher positive impact of perceived usefulness and perceived self-expressiveness in males than females. Further, the positive impact of perceived credibility was higher in females than males while perceived financial cost have no effect on the intention to adopt Islamic mobile banking among both males and females. The present study is organized as follows: the next section sheds light on the literature review including the concept of Islamic banking and its differences from conventional banking, prospect of Islamic banking in Pakistan, Islamic mobile banking (m-banking) definition and prior studies supporting the role of gender. Then the research model and development of hypothesis, research methodology and results and Data analysis are presented. Finally, discussion, conclusion and managerial implication are suggested.

2. Literature review

2.1. Concept of Islamic banking and its differences from conventional banking

Islamic banking is based on the guidelines and principles of Islamic Shairah which are derived from the Holy Book Quran, in which the dealings in interest, whether it is receipt or payment is forbidden. So the definition of Islamic bank, according to the Organization of Islamic Countries is "a financial institution whose status, rules and procedures expressly state its commitment to the principle of Islamic Shari'ah and banning of the receipt and payment of interest on any of its operations" (Goh & Sun, 2014). The history of establishment of present Islamic banks can be traced back from 1940s (Khan & Bhatti, 2008) and since then it has become huge trillion dollar industry. According to Islamic Financial Services Board (2015), operating in more than 75 countries with more than 400 Islamic banks and 191 approximately conventional banks with Islamic banking department.

The difference between conventional banking and Islamic banking is that Islamic banks follow principles of Shari'ah and laws of Holy Quran in which earning through uncertainty, speculation or risk (Gharar) and interest (Riba) is forbidden (Dixon, 1992). The other difference is that the building blocks of Islamic banking is based on equity contribution, profit-risk sharing and societal equality (Dixon, 1992; Khan & Bhatti, 2008). Unlike conventional banks in which depositors assign their risk to the banks for a predefined fixed and guaranteed interest, Islamic banks apply investment approach of profit and loss sharing. For deposits, Islamic banks use the name Mudarabah in which depositor is not given a predefined promised return, instead return is given according to the profit and loss sharing basis which depends on performance of Islamic bank (Hasan and Dridi, 2010; Islamic Financial Services Board, 2015). For savings, the term Wadiah is used in which bank enter with the depositor into a contract as safe keeper of his savings. The bank utilize depositor's funds under the guidelines of Shariah and at the end, depositor is given in addition with his funds a return named as Hibah depending on the performance of the bank (Amin, Hamid, Lada, & Anis, 2008; Islamic Financial Services Board, 2015). Additionally, under the Islamic principle of Haram, it is not permitted to have business relationships with organizations involved in the production of pork, alcohol, pornography, weapons or armaments and promoting gambling. So Islamic banks are required to abide by the rules and laws provided by Shariah and Holy Book Quran. Table A.1 includes the brief description of some of the main Islamic banking products.

2.2. Prospects of Islamic banking in Pakistan

In Pakistan, The practical efforts to establish Islamic banking started in 1980s when Council of Islamic Ideology (CII), submitted the framework to make Pakistan an interest free economy. According to [State Bank of Pakistan KAP Study \(2014\)](#), Pakistan has become among the three countries (Sudan, Iran, Pakistan) that are fully committed to Islamic principles of banking and finance. The latest progress in country is that there are 5 complete Islamic banks along with 14 conventional banks with Islamic banking window available for the nation. According to Islamic banking bulletin by State Bank of Pakistan, the market size of Islamic banking in 2015 is comprised of 11.3% ([Islamic Banking Department, 2015](#)). The consistent double digit growth and year on year increase in market share is self-evident of acceptability of Islamic banking in the country. Expansion of Islamic banking industry improves the financial inclusion as it provides a substitute to those population in Pakistan who are faith sensitive and have voluntarily excluded themselves from conventional interest based banking ([State Bank of Pakistan KAP Study, 2014](#)).

2.3. Islamic mobile banking (m-banking) definition

[Shaikh and Karjaluoto \(2015\)](#) defined mobile banking as “A product or service offered by a bank . . . or conducting financial and non-financial transactions using a mobile device, namely a mobile phone, smartphone, or tablet”. Likewise, Islamic mobile banking is the use of Islamic banking products and services through portable ([Goh & Sun, 2014](#)). Bank services includes transfer of money, balance inquiry, transition inquiry, payment and receipts alerts, shopping, mobile top-up etc.

2.4. Prior studies exploring gender effect

Studies exploring the gender role signifies how personal traits and gender difference are crucial to perception and usage of new technologies. The studies have noted that males' curiosity to try out new technology are more than females and females are more nervous with the new technology, suggesting males show greater confidence and conformability ([Lu, Yu, & Liu, 2006](#); [Whitley, 1997](#)). By using the extending version of Technology Acceptance Model (TAM) to see the gender difference in the use of software, [Venkatesh and Morris \(2000\)](#) stated that females are concerned with perceived ease of use and males regard perceived usefulness as significant factors in software usage decision. In 2005, Nysveen et al. conducted the study by integrating Theory of Reasoned Action (TRA) and Technology Acceptance Model (TAM) moderated by gender to see factors affecting usage of mobile chat service. Their results propose that intrinsic motives and social norms significantly affect the females to use mobile chat service. Privacy and security are the key factors for credibility for the adoption of new technology and the level of credibility vary across genders. [Cho and Jialin \(2008\)](#) found while conducting e-commerce transaction, males' tendency to trust is more in females and, [Garbarino and Strahilevitz \(2004\)](#) noted that perception of risk is higher in females. Regarding the consumer behavior of young adults, innovativeness, self-identities and creativity are important attributes and can be viewed as self-expressiveness ([Goldgehn, 2004](#)). In his study, [Plant \(2000\)](#) reported that self-expression is higher in females than males

In the context of mobile banking, [Amin \(2007\)](#) use model analogous to [Nysveen et al. \(2005\)](#) to investigate factors effecting the use of SMS mobile banking. Their findings showed that males place importance to perceived system quality and perceived usefulness as compared to females who regard perceived ease of use, social norms and perceived expressiveness to use SMS banking. Further, in Singapore, the study of mobile banking adoption by [Riquelme and Rios \(2010\)](#) suggested the relevant advantage an important factor for males while social norms and ease of use have significantly related to females in adopting mobile banking. [Nel and Raleting \(2010\)](#) found the similar results to [Nysveen et al. \(2005\)](#) and [Riquelme and Rios \(2010\)](#) that ease of use is stronger determinant of adoption of mobile banking for female. To study the moderating effect of gender in mobile banking adoption in Taiwan, [Yu \(2012\)](#) applied Unified Theory of Acceptance and Use of Technology (UTAUT). The findings revealed men have more concerns for performance expectancy, perceived financial cost and facilitating conditions and self-efficacy has higher effect on women in adopting mobile banking.

The above mentioned studies well documented the role of gender in adoption of m-banking services. Thus, in order to understand the effect of gender in adoption of Islamic mobile banking, the present study is conducted to examine the role of gender difference in the context of Islamic mobile banking.

3. Research model and development of hypothesis

For most of the intention to adopt m-banking studies, Technology Acceptance Model (TAM) can be seen as a popular framework for research and the extended TAM has been applied in many recent studies which shows its appropriateness and rationale ([Aboelmaged & Gebba, 2013](#); [Akturan & Tezcan, 2012](#); [Chitungo & Munongo, 2013](#); [Goh & Sun, 2014](#); [Hanafizadeh, Behboudi, Koshksaray, & Tabar, 2014](#); [Safeena, Date, Kammani, & Hundewale, 2012](#)). In their literature review on mobile banking adoption, [Shaikh and Karjaluoto \(2015\)](#) found that out of 55 studies conducted between the year 2005 to 2015, 42% researchers used TAM or extended versions of TAM. The present study also applied extended technology acceptance model (TAM) proposed by [Goh and Sun \(2014\)](#). [Fig. 1](#) shows the complete depiction of the research model. The exogenous variables affecting the endogenous variable behavioral intention to use m-banking are: perceived financial cost (PFC), perceived usefulness, social norms, perceived credibility and perceived self-expressiveness. These are discussed as under one by one.

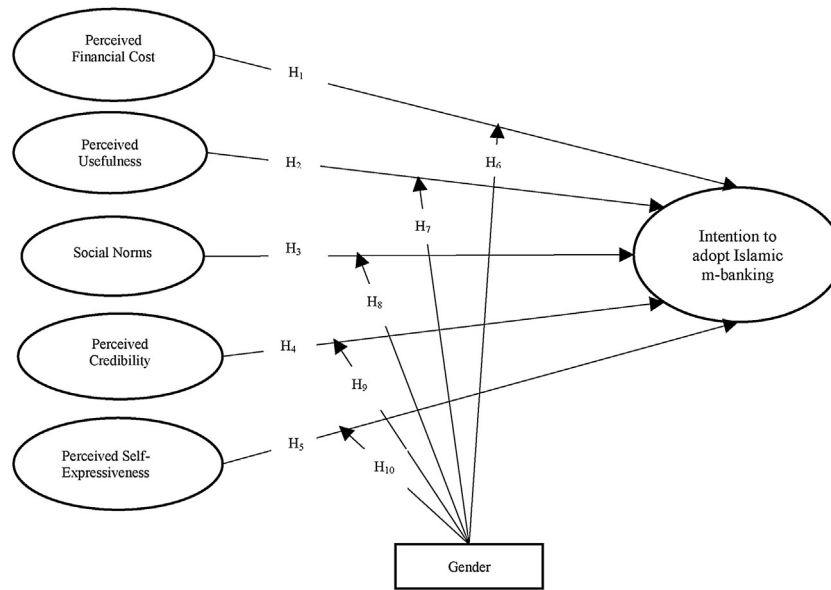


Fig. 1 – Hypothesized extended TAM model

3.1. Perceived financial cost

Besides sociological and behavioral or psychological theories to examine the m-banking adoption by individuals, researches also revealed the impact of economic factors like transaction fees or service fees and cost (cost burden) of using m-banking (Amin, 2007; Cruz, Barretto Filgueiras Neto, Muñoz-Gallego, & Laukkanen, 2010; Sulaiman, Jaafar, & Mohezar, 2007; Yang, 2009). Luarn and Lin (2005) defined perceived financial cost as the degree of an individual perception about cost of using m-banking. Huili and Zhong (2011) in their study highlighted the negative impact of perceived financial cost. Yu (2012) conducted the study on 441 respondents from Taiwan and stated the negative impact of perceived financial cost on intention to m-banking adoption.

3.2. Perceived usefulness

Davis (1989) defined perceived usefulness is “the prospective user’s subjective probability that using a specific application system will increase his or her job performance within an organizational context”. In other words Perceived usefulness is the perception of individuals that how well m-banking services are combined with daily activities (Kleijnen, Wetzels, & De Ruyter, 2004). Perceived usefulness is the belief that individuals will actually ready to accept and use m-banking if they perceived that it is helpful in increasing their work efficiency (Gu, Lee, & Suh, 2009). Prior researches have included perceived usefulness and found its significant effect and stated it as rational depiction of user willingness (intention) to use technology (Alsajjan & Dennis, 2010; Gu et al., 2009; Legris, Ingham, & Collerette, 2003).

3.3. Social norms

Riquelme and Rios (2010) defined social norms as “factors that relate to the influence of significant other such as family, relatives or friends, in the decision to use a product or service”. Several studies confirmed the role of social norms in adoption of m-banking services (Chan & Lu, 2004; Riquelme & Rios, 2010). Oliveira, Faria, Thomas, and Popović (2014) mentioned social norms as an individual view which is affected by how much family or peers value the usage of m-banking. In Taiwan, the study of Yu (2012) pointed out social norms, the main influential factor in intention to adopt m-banking. Similarly, Kleijnen et al. (2004) validated the impact of social norms in the adoption of wireless finance. According to the above discussion it is likely that social norms will impact the intention to adopt Islamic m-banking.

3.4. Perceived credibility

In the context of Islamic m-banking, perceived credibility can be defined as the confidence in the system and privacy of personal information individual have while conducting transition (Goh & Sun, 2014). The impact of perceived credibility not only have been empirically stated significant in the studies of m-banking adoption (Amin et al., 2008; Luarn & Lin, 2005) but also in the studies on internet banking (Wang, Wang, Lin, & Tang, 2003; Yuen, Yeow, Lim, & Saylani, 2010).

3.5. Perceived self-expressiveness

Goldgehn (2004) defined perceived self-expressiveness as the “importance of social expression of identity and self-identification”. Due to high innovativeness, self-identity and creativity, for young adults, perceived self-expression is crucial in adoption of technology (Goh & Sun, 2014; Sun et al., 2012). Several studies have incorporated perceived self-expressiveness in the TAM and stated its significant effect on individuals’ intention to adoption (Nysveen et al., 2005; Pedersen & Nysveen, 2003; Pedersen, 2005). Here we can postulate that perceived self-expressiveness will impact the intention to Islamic m-banking adoption.

In the light of above theoretical discussion about extended TAM, the model generates following hypotheses:

H₁. Perceived financial cost negatively impacts the intention to adopt Islamic m-banking.

H₂. Perceived usefulness positively impacts the intention to adopt Islamic m-banking.

H₃. Social norms positively impacts the intention to adopt Islamic m-banking.

H₄. Perceived credibility positively impacts the intention to adopt Islamic m-banking.

H₅. Perceived self-expressiveness positively impacts the intention to adopt Islamic m-banking.

In order to explore gender effects, we propose to include the gender and to see its impact in the context of Pakistan. Therefore our hypotheses are:

H₆. The negative impact of perceived financial cost on the intention to adopt Islamic m-banking is expected to be higher in males than females.

H₇. The positive impact of perceived usefulness on the intention to adopt Islamic m-banking is expected to be higher in males than females.

H₈. The positive impact of social norms on the intention to adopt Islamic m-banking is expected to be higher in females than males.

H₉. The positive impact of perceived credibility on the intention to adopt Islamic m-banking is expected to be higher in females than males.

H₁₀. The positive impact of self-expressiveness on the intention to adopt Islamic m-banking is to be expected to be higher in males than females.

4. Research methodology

4.1. Participants, sample and sampling technique

The participants of this study were those who are the users banking services in Pakistan and most of the participants included in the survey were businessmen, students and salaried persons. The rationale behind choosing Pakistan is seamlessly aligned with the recommendations of Shaikh and Karjaluoto (2015) who mentioned in their study to conduct research on developing countries due to huge potential for m-banking adoption. According to financial inclusion insights (2014, September), the access to mobile phone in adult population is 80%, however, when this 80% is divided into genders, it accounts only 38% for female and 80% for male population. This creates a 42% gender gap in mobile access between male and female population of Pakistan. Additionally, the youth population in age range of 20-24 years have 70% more access rate to mobile phones than elder age groups. These figures suggest that the mobile access rate is rapidly increasing in upcoming youth population, therefore, in Pakistan, it is important to see how gender role is critical in the growth of Islamic banking industry. Particularly, when the Islamic banking is growing rapidly and outperforming its conventional banking competitors in Pakistan. The researchers chose convenience sampling method. This particular sampling technique was used due to the unavailability of complete details about the customers of the banks. For the privacy of the customers, the banks usually do not reveal the information about their customers therefore researchers decided to use convenience sampling for data collection. The respondents were contacted on the sight for data collected when they were present there for normal day to day transaction. The sampling method implemented in this study has also been used in many prior studies (e.g. Afshan & Sharif, 2016; Al-Jabri & Sohail, 2012; Chen, 2008). The questionnaire was presented to the participants after getting the consent and explaining the purpose of the study. The questionnaires distributed to 300 participants. 20 participants did not return the questionnaire while 37 participants were dropped out due to unengaged responses. After scrutiny, the final sample left 243 useable responses for analysis. For the analysis of data in SEM, Iacobucci and Churchill (2010) suggested that even small sample size from 50 to 100 responses in the SEM model works well. In this perspective, sample data for this study was sufficient to perform SEM estimations. Table A.2 summarizes the demographic information of participants. All the questionnaires were entered with caution and care.

4.2. Measurement scale

In order to make sure the content validity of the measurement scale, the items must represent the construct on which generalization can be made. Therefore, to make sure the content validity, the items are adapted from the prior studies who already validated these construct in technology adoption studies (Goh & Sun, 2014; Luarn & Lin, 2005; Pedersen and Nysveen, 2003; Sun et al., 2012). These studies reported higher alpha reliability values. Items to measure perceived usefulness, perceived financial cost, social norms and perceived self-expressiveness are adapted from the study of Sun et al. (2012) and the reported Cronbach's alpha reliability values are 0.888, 0.800, 0.842 and 0.886 respectively. The measurement scale of perceived credibility and Intention to adopt are adapted from the study of Goh and Sun (2014) and the reported Cronbach's alpha reliability values are 0.812 and 0.970 respectively. The questionnaire was comprised of two parts. First part contained the demographic and background information while the second part consisted of the items measuring the constructs. A five-point Likert scale was employed ranging from strongly Disagree (1) to strongly agree (5). All the questionnaires were scrutinized properly and every participant was explained the objective of the study.

5. Results and data analysis

For testing the hypothesis and data analysis, SPSS 21 and AMOS 21 has been used on the sample of 243 respondents.

5.1. The descriptive statistics and alpha reliability

The alpha reliability and computed constructs' mean and standard deviation are presented in Table A.3 (Appendix A). The Cronbach's alpha reliability values are above the cutoff value of .60 (Nunnally & Bernstein, 1994) which indicates that all the items are sufficiently reliable for measurement.

5.2. Exploratory factor analysis (EFA)

For exploratory factor analysis, Kaiser Meyer Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity in combination of promax rotation and maximum likelihood method based on Eigenvalues greater than 1 were applied. The KMO measure of sampling adequacy resulted 0.753 which is above the cut off value of 0.70. This suggests that sample of the current study is suitable for factor analysis (Leech, Barrett, & Morgan, 2005). While the result of Bartlett's test of sphericity (Approx. Chi-Square 1459.6, $df=120$, $p<.000$) is the evidence of significantly dissimilar correlation matrix from identity matrix and non-zero correlation among variables (Leech et al., 2005). Finally, promax rotation resulted in final 15 items (see Table A.4, Appendix A) of the factor loadings that were above 0.55 (Tabachnick & Fidell, 2007).

5.3. Convergent and discriminate validity

Table A.4 presents the factor loading, composite reliability (CR) and average variance explained (AVE). Most of the loadings are above the cut off value 0.55 (Tabachnick & Fidell, 2007). Concerning the convergent validity issue, the measurement scale is meant to be reliable if the values of CR and AVE are above than 0.7 and 0.5 (Bagozzi & Yi, 1988; Gefen, Straub, & Boudreau, 2000). Discriminant validity ensures that scale does not correlate with those variables to whom it should differ. To examine this issue, square root of AVE was found which should be larger than its coefficient of correlation with other factors exhibiting good discriminant validity (Gefen et al., 2000). Table A.5 validates the discriminant validity because all the square root of AVE are larger than its coefficient of correlation.

5.4. Configural and metric invariance test and Common Method Bias

Before performing confirmatory factor analysis, data was analyzed for configural and metric invariance test. The configural invariance test was performed in AMOS 21. The adequate goodness of fit was found by analyzing freely estimated model across two groups (CFI=0.935, $P_{close}=0.504$, RMSEA=0.048, SRMR=.0587). The metric invariance test was performed by restricting the two models (male and female) to be equal and through chi-square difference test, it was found to be invariant between constrained and unconstrained model (chi-square difference=40.433, difference in $df=34$, $p-value=.207$).

In addition, many studies highlighted the issue of common method bias (CMB) and concluded that it may be a significant validity threat and can cause erroneous conclusions (Burton-Jones, 2009; Craighead, Ketchen, Dunn, & Hult, 2011). In order to deal with this issue unmeasured latent method construct (ULMC) approach was performed where the unconstrained common method factor model was compared with zero constrained common method factor model (Podsakoff, MacKenzie, & Podsakoff, 2012; Richardson, Simmering, & Sturman, 2009). The chi-square difference test resulted insignificantly different from zero (chi-square difference=37.345, difference in $df=28$, $p-value=.111$) which mean the study data is reasonably free from common method bias.

5.5. Confirmatory factor analysis (CFA)

The present study further performed CFA with fifteen final loaded items that signified six factors namely perceived usefulness (PU), perceived credibility (PC), social norm (SN), perceived self-expressiveness (PSEXP), perceived financial cost (PFC) and behavioral intention (BI). Results provided multiple indices to analyses. The CFA does not rely on one index hence it relies on combination of indices which exhibits various aspects of model fit (Crowley & Fan, 1997). Table A.6 lists actual and recommended values of some model fit indices. All the values lies under the recommended values which shows good model fit.

5.6. Structural equation modeling (SEM)

The analysis was performed in two steps. First in measurement model internal reliability, convergent and discriminant validity of the items and constructs for both the females and males were obtained. Secondly for structural model, bootstrapping was applied to test the path analysis. (Anderson & Gerbing, 1988).

5.7. Measurement model and structural model

For internal reliability and convergent validity composite reliability (CR) and average variance explained (AVE) and standardized loadings were evaluated. For all measures in Tables A.7–A.10 (see Appendix A) AVE, CR and loadings are above 0.50, 0.70 and 0.55 which is recommended cut-off value (Bagozzi & Yi, 1988; Gefen et al., 2000; Tabachnick & Fidell, 2007). The internal reliabilities along with convergent validity for both male and female samples are good and considered acceptable. For discriminant validity check, square root of AVE (diagonally italics) was higher than inter-correlation among the constructs which showed good discriminant validity (Gefen et al., 2000).

To test the structural model and hypotheses, the path analysis and significance of path coefficients were examined. Bootstrapping was performed on 2000 number of bootstrap samples with 90% bias-corrected confidence intervals to test the significance of path coefficients using chi-square difference test and p -value. The results are described in Table A.11 (Appendix A) for both genders. The results show that the model better fits for male than female in Pakistan's context. The male model explained (R²) 55.7% variance and female model explained 24.8% in intention to adopt Islamic m-banking. These findings are comparable with earlier TAM studies (Amin, 2007; Goh & Sun, 2014; Hwang, 2010). Therefore, findings supported the extended TAM model and reasonably explained the Islamic m-banking adoption. The significance of path differences between male and female was tested using chi-square difference test. Table A.12 (Appendix A) described the results of significance of path differences. The two hypotheses out of five were found significant.

6. Discussion and conclusion

The path for perceived financial cost was found positive but insignificant for both males and females (Males: $\beta = .151$, p -value = .218; Females: $\beta = .145$, p -value = .257). Therefore our hypothesis H1 was not supported. Regarding the intensity of path differences, the gender effect was insignificant and H6 was also not supported (p -value = .385). It seems that financial costs were not the main concern for adoption of Islamic m-banking for both males and females in Pakistan. This finding is contrary to Amin et al. (2008) and Goh and Sun (2014) who discovered that gender difference exists while considering financial cost for adoption of Islamic m-banking. One possible reason may be given that financial costs in south Asia are low (The Economist, 2010). Therefore financial cost is not a major concern for both males and females in Pakistan.

The impact of perceived usefulness on male users was found significant ($\beta = .393$, p -value < .001). Although the path was positive for female users ($\beta = .154$) but it was not significant (p -value = .149). Therefore, H2 was supported for males but not for females. The finding is similar to Hashim (2008), Amin (2007) and Venkatesh and Morris (2000) who revealed in their studies that perceived usefulness for males have stronger impact on behavioral intention to adopt m-banking than females. One probable reason would be that wireless banking is diligently goal driven and males are more task and goal oriented than females (Cruz et al., 2010). Further, the intensity of path difference was found to be significant and H7 was supported (p -value < .05). Hence in the context of Pakistan, the positive impact of perceived usefulness influences male higher and significantly than females.

The impact of social norms on intention to adopt Islamic m-banking was found positive and significant for both genders (male: $\beta = .337$, p -value < .001; female: $\beta = .361$, p -value < .001). Therefore, H3 was supported. However, the intensity of path difference was found insignificant (p -value = .251) and H8 was not supported. The finding was contrary to Goh and Sun (2014), Hwang (2010) and Amin (2007) who revealed that influence of social norms are stronger on females than males. Hence, it was found that social norms influence the adoption of Islamic m-banking in Pakistan and there is no gender difference exists.

Perceived credibility was also found significant in influencing the adoption of Islamic m-banking among female than male (male: $\beta = -.079$, p -value = .286; female: $\beta = .187$, p -value < .01). Thus H4 was supported for Muslim females rather males. But further, the analysis revealed significant path difference between males and females (p -value < .05) so H9 was also supported that females have more concerns for credibility. This finding is dissimilar to the study of Goh and Sun (2014) who reported that perceived

credibility has no impact on adoption of Islamic m-banking and there exist a gender difference that males has higher concerns for credibility than females. Whereas our findings suggested that credibility has no concerns among males in Pakistan. The possible explanation may be given that females in Pakistan, due to lack of IT knowledge are influenced by credibility (privacy and trust) toward adoption of Islamic mobile banking.

Further, the impact of perceived self-expressiveness was found significant for Muslim males than females (male: $\beta = .183$, p -value $< .05$; female: $\beta = -.046$, p -value $= .613$). The path difference was also found significant between male and female (p -value $< .05$). Hence H5 and H10 for males were supported. This finding is similar to the study of Goh and Sun (2014) that the desire of personality, status and values (attributes of self-expressiveness) influence male more than females to adopt Islamic m-banking in a Muslim culture.

To sum up, in the present study two interesting and different models revealed to see the acceptance of Islamic m-banking in Pakistan. In male model only three factors perceived usefulness, social norms and perceived self-expressiveness significantly influence the adoption. In female model social norms and perceived credibility are the two factors that influenced the acceptance of Islamic m-banking. Moreover perceived financial cost is not considered a significant factor in the acceptance of Islamic m-banking among both gender (male and female) in Pakistan.

7. Managerial implication

The findings from the present study have strong managerial implications for bankers who wish or already has established Islamic m-banking. The analysis shows different patterns with respect to gender difference. Bankers, by considering the gender effect, may use the findings to maximize their strategic goal using gender base market segmentation. The findings may also be implemented while designing the promotional and service design to attract females as females are more credibility and trust sensitive. In order to attract male Muslims, bankers may market their Islamic m-banking delivery channel by explicitly mentioning the attributes of perceived self-expressiveness i.e. personality, status and lifestyle. In promotion and marketing of Islamic m-banking, bankers may demonstrate the different easy use of m-banking. Furthermore, the findings may also be suitable for those bankers who wants to explore banking opportunities in Muslim countries like Pakistan to take advantage of the gender differences.

7.1. Practical implication

As the results suggested that female consumers have higher perceived credibility effect on their intention to adopt Islamic mobile banking, therefore, they can be huge potential and untapped marketing segment. Focusing more on the female consumers might provide better opportunities for Islamic banks to spread the mobile banking acceptability.

Females are about 50% of Pakistan's population. However, they are lagging behind in education, particularly IT related education and computer literacy. The lack of education is co-adjacent with the lower self-expressiveness in females. This suggests a lower confidence level and therefore, less self-expressiveness. It is suggested that females should be provided equal chances to study and work, thus helping them to be a productive part of the society.

7.2. Limitations and future research suggestions

The present study is not free from some limitations. There are few limitations which may be used as base for future research. First, mobile banking is in its innovative phase and this study is based on the adoption of m-banking services through smart phones and tablets. Therefore, future inventions which do not involve the use of portable devices to conduct financial transactions are not covered in the present study. Second, the sample is largely based on younger population and students. Despite the earlier studies who proposes students and younger population to reflect the typical consumer (e.g. Zhou, 2012), there might be external validity threat that findings may not be appropriate to generalize entire population. Third, the present study utilized only urban data while rural population was ignored. Future research may include rural population and may also include some comparison of urban-rural behavior in acceptance of Islamic m-banking. Lastly, the study is conducted in Pakistan which is ethnically and culturally different from rest of the Islamic countries. Thus future research is suggested to apply the model on other Islamic countries.

Conflict of interest

Table A.1 – Description of main Islamic banking products.

Mudarabah	The partnership agreement between bank and the customer where bank provide capital to the enterprise operated by customer. Profit by that enterprise is distributed according to the Mudarabah agreement and loss is born by the bank unless the loss is because of the negligence, misconduct or violation of Mudarabah agreement.
Murabahah	The sale agreement with the customer. The bank sells specific asset under its possession to the customer. The sale price included the value of asset and a profit agreed according to Murabahah agreement.
Musharakah	It is the agreement with customer and the bank on permanent or temporary basis where both parties contribute a sum of money in moveable/immoveable asset(s) or bank contribute capital to the firm. The profit and loss from those asset(s) or firm is distributed according to the terms defined in Musharakah agreement.
Sukuk	It is Shariah compliant certificate, which represents proportional right of ownership of assets or pool of assets.
Takaful	It is an agreement in which members contribute money in a common fund. The fund is used to compensate the member against loss or damage, defined in the Takaful agreement.
Wadiah	The amount deposited by customer with a promise of his funds in full.

Source: Islamic Financial Services Board (IFSB) Report (2015).

Table A.2 – Demographic composition of data.

Particulars		Percentage
Gender		
Male	113	46.5
Female	130	53.5
Total	243	100
Age		
(a) 18-25	148	60.9
(b) 26-30	76	31.3
(c) 31-35	15	6.2
(d) 36-40	2	.8
(e) 41+	2	.8
Total	243	100
Profession	243	100
(a) Student	127	52.3
(b) Employee	108	44.4
(c) Businessmen	8	3.3
Total	243	100
Are you familiar with mobile banking?	Yes	

N=243.

Table A.3 – Descriptive statistics.

	Mean	Std. deviation	Cronbach's alpha
Perceived usefulness	3.0225	1.04253	.815
Perceived credibility	2.7947	.99641	.868
Perceived financial cost	3.1836	1.06699	.663
Perceived self expressiveness	3.3994	.85043	.637
Social norms	2.8442	.84485	.635
Behavioral intention	3.5942	.97396	.864

N=243.

Table A.4 – Internal and convergent validity: EFA factor loading and composite reliability and average variance explained.

Factors	CR	AVE	Items	Factor loadings						
				1	2	3	4	5	6	
Perceived usefulness	0.853	0.604	PU1	.795						
			PU2	.796						
			PU3	.786						
Perceived credibility	0.782	0.758	PC1		.896					
			PC2		.980					
Social norms	0.835	0.520	SN1			.647				
			SN2			.751				
			SN3			.792				
Behavioral intention	0.805	0.770	BI1				.679			
			BI2				.719			
Perceived self expressiveness	0.724	0.514	PSEXP1						.759	
			PSEXP2						.772	
			PSEXP3						.751	
Perceived financial cost	0.839	0.546	PFC1							.780
			PFC2							.859

Extraction method: maximum likelihood.

Rotation method: Promax with Kaiser normalization.

a. Rotation converged in 6 iterations.

Table A.5 – Discriminant validity: square root of AVE (shown in *italics* diagonally) and factor correlation matrix.

	PSEX	PU	PC	SN	BI	PFC
Perceived self expressiveness	<i>0.717</i>					
Perceived usefulness	0.085	<i>0.777</i>				
Perceived credibility	0.004	0.422	<i>0.871</i>			
Social norms	0.266	0.283	0.113	<i>0.721</i>		
Behavioral intention	0.212	0.537	0.331	0.527	<i>0.878</i>	
Perceived financial cost	0.056	0.176	0.096	0.343	0.245	<i>0.739</i>

Table A.6 – Actual and recommended values of model fit indices.

Model fit indices	Chi-square/df	CFI	NFI	RSMEA	SRMR
Recommended values	<2	>0.90	>0.90	<.07	<0.08
Actual values	1.642	0.969	0.922	0.048	0.059
References	Tabachnick and Fidell (2007)	Gefen et al. (2000)	Gefen et al. (2000)	Steiger (2007)	Hu and Bentler (1999)

Table A.7 – Male measures: internal reliability, individual items loadings, standard error (S.E.) and critical ratio (C.R.).

Constructs	Indicators	Loading	S.E.	C.R.
Perceived usefulness	PU1	.840 ^{***}	.061	14.339
	PU2	.811 ^{***}	.073	13.929
	PU3	.733 ^{***}	.071	12.606
Social norms	SN1	.777 ^{***}	.071	12.854
	SN2	.583 ^{***}	.076	9.451
	SN3	.845 ^{***}	.066	14.274
Perceived self expressiveness	PSEXP1	.707 ^{***}	.071	11.239
	PSEXP2	.753 ^{***}	.061	13.416
	PSEXP3	.709 ^{***}	.071	11.901
Perceived credibility	PC1	.905 ^{***}	.101	11.490
	PC2	.907 ^{***}	.104	11.701
Behavioral intention	BI1	.972 ^{***}	.062	18.510
	BI2	.916 ^{***}	.056	16.712
Perceived financial cost	PFC1	.852 ^{***}	.095	6.791
	PFC2	.632 ^{***}	.073	6.175

*** p-Value < .01.

Table A.8 – Female measures internal reliability: individual items loadings, standard error (S.E.) and critical ratio (C.R.).

Constructs	Indicators	Loading	S.E.	C.R.
Perceived usefulness	PU1	.771***	.061	14.339
	PU2	.770***	.073	13.929
	PU3	.732***	.071	12.606
Social norms	SN1	.753***	.071	12.854
	SN2	.591***	.076	9.451
	SN3	.831***	.066	14.274
Perceived self-expressiveness	PSEXP1	.675***	.071	11.239
	PSEXP2	.858***	.061	13.416
	PSEXP3	.741***	.071	11.901
Perceived credibility	PC1	.880***	.101	11.490
	PC2	.932***	.104	11.701
Behavioral intention	BI1	.933***	.062	18.510
	BI2	.829***	.056	16.712
Perceived financial cost	PFC1	.822***	.095	6.791
	PFC2	.609***	.073	6.175

*** p-Value < .01.

Table A.9 – Male measures convergent and discriminant validity: composite reliability (CR), square root of AVE (shown in italics diagonally) and factor correlation matrix.

	CR	AVE	MSV	BI	PU	SN	PSEXP	PC	PFC
Behavioral intention	0.943	0.892	0.349	0.944					
Perceived usefulness	0.838	0.634	0.349	0.591	0.796				
Social norms	0.784	0.553	0.309	0.556	0.444	0.743			
Perceived self-expressiveness	0.767	0.523	0.144	0.379	0.208	0.374	0.723		
Perceived credibility	0.902	0.821	0.069	0.061	0.263	0.041	-0.017	0.906	
Perceived financial cost	0.716	0.563	0.097	0.229	0.312	-0.030	-0.044	0.238	0.750

Table A.10 – Female measures convergent and discriminant validity: composite reliability (CR), square root of AVE (shown in italics diagonally) and factor correlation matrix.

	CR	AVE	MSV	BI	PU	SN	PSEXP	PC	PFC
Behavioral intention	0.875	0.779	0.176	0.883					
Perceived usefulness	0.802	0.574	0.092	0.304	0.758				
Social norms	0.773	0.536	0.176	0.420	0.303	0.732			
Perceived self expressiveness	0.804	0.580	0.061	0.094	0.077	0.246	0.762		
Perceived credibility	0.902	0.822	0.043	0.207	0.199	-0.019	-0.074	0.906	
Perceived financial cost	0.798	0.523	0.035	0.186	0.049	0.146	0.028	0.070	0.723

Table A.11 – SEM hypothesis testing.

Hypothesized paths	Male (Bootstrapping 2000)					Female (Bootstrapping 2000)				
	Path coefficients	S.E.	C.R.	p	Supported	Path coefficients	S.E.	C.R.	p	Supported
BI ← PFC	.151	.231	1.231	.218	H1:No	.145	.164	1.858	.257	H1:No
BI ← PU	.393	.119	3.808	***	H2:Yes	.154	.185	1.444	.149	H2:No
BI ← SN	.337	.127	3.246	***	H3:Yes	.361	.135	3.290	***	H3:Yes
BI ← PC	.079	.082	1.068	.286	H4:No	.187	.080	2.132	**	H4:Yes
BI ← PSEXP	.183	.117	2.123	**	H5:Yes	.046	.133	.505	.613	H5:No

** p-Value < .01.

*** p-Value < .001.

Table A.12 – Comparing the intensity of path differences.

		Evidence (<i>p</i> -value)	Conclusion
BI←PFC	M>F	.385	H6: Not supported
BI←PU	M>F	*	H7: Supported
BI←SN	F>M	.251	H8: Not supported
BI←PC	F>M	*	H9: Supported
BI←PSEXP	M>F	*	H10: Supported

* *p*-Value < .05.

None declared.

Appendix A.

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