Does gender differences play any role in intention to adopt Islamic mobile banking? An empirical study

Abstract

Purpose –Tremendous growth and worldwide expansion of Islamic banking industry has gained widespread attention of economist, bankers, investors and financial experts regardless of economic and political volatility in global banking industry. In order to compete with conventional banking, Islamic banks are setting up themselves with innovative technologies to gain competitive edge and market share. The establishment of mobile banking has been proven a technological wonder by eliminating time and space boundaries and one can access financial services anywhere and at any time. For effective market segmentation, recognizing gender differences in factors affecting the adoption patterns of m-banking may provide competitive edge. Therefore, the present study is aimed to investigate how gender differences impact the intention to adopt Islamic mobile banking in Pakistan.

Design/Methodology/Approach – The study employs extended technology acceptance model (TAM) on final 243 participants from Pakistan. Confirmatory factor analysis (CFA) and structural equation modeling (SEM) methodology has been applied for data analysis using SPSS 21 and AMOS 21.

Findings – Results have identified two interesting and different models for males and females in 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. However, 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.

Originality/value – The contribution of this study to existing literature is twofold. First, the existing research on mobile banking has mainly applied technology acceptance model on conventional banking overlooking the important ethnic group, the Muslims, who prefer Islamic banking. Second, to investigate the impact of gender differences in factors affecting intention to adopt Islamic mobile banking that has not been studied previously. The study fills the gap.

Keywords Gender differences, Gender effect, Islamic mobile banking, Islamic banking, Technology adoption, Technology Acceptance Model (TAM), Pakistan.

Paper type Research paper

1. Introduction

Regardless of economic and political volatility in global banking industry, the Islamic banking is a rapid growing industry. The concept of Islamic banking has gained widespread attention of economist, bankers, financial experts and investors from global traditional banking industry. The history of establishment of present Islamic banks can be traced back from 1940s (Khan and Bhatti, 2008) and since then it has become huge trillion dollar industry. According to Islamic Financial Services Board (2015), there are more than 400 Islamic banks and

approximately 191conventional banks with Islamic banking window operating in more than 75 countries. Tremendous growth and worldwide expansion of Islamic banking industry in the global financial markets are the main reasons behind it. The recent world Islamic competiveness report stated 16% of compound annual growth rate in global Islamic finance industry from 2010 to 2014 (Ernst & Young, 2016). It has become huge industry with assets reported in 2014 were estimated to USD I.87 trillion. The operations of Islamic banking are built on unique value based system that protect both moral and material wellbeing of the individuals and the society. Islamic banking follows *Shariah* compliance derived from the Holy Quran which prohibits the Islamic banks to invest in toxic assets. Due to this limit, Islamic banks were not severely influenced by the financial crisis (Hassan and Dridi, 2010). This caught attention of several customers, investors and other stake holder adding further encouragement to the acceptance of Islamic banking. With the intention to compete with the conventional banking, Islamic banks are setting up themselves with innovative technologies to gain competitive edge and market share (Goh and Sun, 2014; Sun et al., 2012; Sadeghi and Hanzaee, 2010). One of the most recent invention is mobile banking (m-banking) which is the usage of mobile phone to conduct financial transaction (Yu, 2012). With the distribution of wireless access protocol (WAP), establishment of 3G and 4G technologies people's life style has switched as round the clock connectedness turn out to be inevitable (Ha et al., 2012). This life style change has made commercial prospects for the banks to present high value m-banking services (Goh and Sun, 2014) while eliminating the conventional banking limitation of time and place (Lin, 2013). These current alterations in customer's lifestyle suggests the need to reinvestigate, in new context, the individual perceptions about Islamic mobile banking. Further adding to, many of the technology adoption barriers like cost, access and service quality has been greatly reduced so Islamic banks must develop a deep insight of all the factors affecting the adoption m-banking as the new context may alter already theorized relationship insignificant and perhaps may establish new relationship (Johns, 2006). Prior studies have incorporated the presence of gender effect with the adoption of new technology such as information communication technology (Selwyn, 2007). Sohn and Lee (2007), in the framework to adopt mobile services, stated that females due to their willingness and self-presentation are more convinced to adopt text messages than males. In the context of m-banking adoption, Riquelme and Rios (2010) found that social norms and ease of use have higher impact on female than males. The significance of the role of gender in adoption of m-banking services is evident from the work of several authors (e.g. Diwan, 2010; Riquelme and Rios, 2010). In both of these studies, authors have highlighted the importance of m-banking and further called to explore the role of gender in intention to adopt m-banking. Due to this highlighted significance of the said phenomenon, further investigation in this area needs considerable attention. Therefore, the present study is aimed to explore the role of gender differences in intention to adopt m-banking services focusing Islamic banking services and to provide managerial implications for designing effective marketing strategies and understanding the important role of gender in providing customer's satisfaction. The contribution of this study to existing literature is twofold. First, the existing research on mobile banking has mainly applied technology acceptance model on conventional banking overlooking the important ethnic group, the Muslims, who prefer Islamic banking. Second, to investigate the impact of gender differences in factors affecting intention to adopt Islamic mobile banking that has not been studied previously. The study fills the gap.

2. Literature review

Islamic banking is founded on the principles and guidelines of *Shairah* which are excerpted from the Holy *Quran*, in which the dealings in interest, whether it is receipt or payment is forbidden. For the banking system to be Islamic, prohibition of interest is only one aspect. The other essential related issues like *Halal* (lawful) and *Haram* (unlawful), moral and ethical values, commitment of *Zakah* and such other issues are also implemented (Iqbal and Mirakhor, 2007). The Organization of Islamic Countries (OIC) defines Islamic bank as "a financial institution whose status, rules and procedures expressly state its commitment to the principle of Islamic *Shariah* and banning of the receipt and payment of interest on any of its operations" (Goh and Sun, 2014).

Unlike conventional banking, in Islamic banking system earnings through speculation, uncertainty, risk (*Gharar*) and interest (*Riba*) are prohibited (Dixon, 1992). In addition, the other building blocks of Islamic banking like equity contribution, societal equality and profit-risk sharing make it different from traditional banking (Khan and Bhatti, 2008; Dixon, 1992). Unlike conventional banks where depositors allocate their risk to the banks for a fixed and guaranteed interest, the Islamic banks employ investment approach – profit and loss sharing. For deposits, the name *Mudarabah* is used in which depositor is given return according to the profit and loss sharing basis depending on performance of Islamic bank, instead of a predefined promised return (Islamic Financial Services Board, 2015; Hassan and Dridi, 2010). For savings, Islamic banks use the term *Wadiah* in which they act as safe keeper of depositor's savings. The bank invest depositor's money under the principles of *Shariah* Law and depending on the performance of investment, a return named as *Hibah* depositor is given in addition with initial funds (Islamic Financial Services Board, 2015; Amin, 2008). Moreover, under the Islamic principles of *Haram*, banks are not permitted to have business relationships with corporations involving in the production of alcohol, pork, weapons, pornography, gambling and speculation. Table 1 includes the brief summary of some of the key Islamic banking products.

[Take in Table 1 here]

2.1. Mobile banking (m-banking)

Mobile banking is defined 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" (Shaikh and Karjaluoto, 2015). Similarly, Islamic mobile banking can be defined as the use of Islamic banking products and services through mobile phone or tablets (Goh and Sun. 2014). Banking services includes payment and receipts alerts, transfer of money, mobile top-up, balance inquiry, shopping etc. However due to its unique features and growing importance, several studies have been conducted to examine the adoption of the service (Hanafizadeh et al., 2014; Aboelmaged and Gebba, 2013; Chitungo and Munongo, 2013; Akturan and Tezcan, 2012, Safeena et al., 2012). Most of the studies applied Technology Acceptance Model (TAM). Among these studies perceived usefulness have been stated the most significant factor followed by perceived ease of use. Moreover, in some studies, the relationship of factors like initial trust, social influence, self-efficacy, attitude and personal innovativeness have found positive while the impact of perceived risk and cost are negatively related to the adoption of m-banking (Afshan and Sharif, 2016; Malaquias and Hwang, 2016; Baptista and Oliveira, 2014; Aboelmaged and Gebba, 2013; Toe et al., 2012; Akturan and Tezcan, 2012). In

addition to, the work of Yu (2012), Wang et al. (2009) and Suoranta and Mattila (2004) reported intention to m-banking adoption is higher in young adults than older.

2.2. Islamic banking in Pakistan: a brief overview

The roots of Islamic banking can be traced from the statement made by founding father of Pakistan, Quaid-e-Azam Muhammad Ali Jinnah at the inauguration speech of State Bank of Pakistan (SBP) in 1948; "I shall watch the work of your organization in evolving banking practices compatible with Islamic ideas of social and economic life". Consistent with the vision of Quaid-e-Azam, the Council of Islamic Ideology (CII) was established in 1957. Concrete efforts to launch Islamic banking started in 1980s when CII presented the framework to make Pakistan an interest free economy. Pakistan is among the three countries e.g. Sudan and Iran that are fully committed to establish banking and finance sector under Islamic principles (KAP Study, 2014). At present, there are five banks capable to deliver complete Islamic banking services and fourteen conventional banks with Islamic banking branches available for the customers. According to State Bank of Pakistan Islamic banking department, Islamic banking bulletin, the market size of Islamic banking has increased to 11.3% in 2015 as compared to 9.6% in 2013 of the total banking assets of the country. The steady double digit growth along with year on year increase in market size is self-evident of acceptability of Islamic banking in the country as it provides a substitute to those population in Pakistan who are faith sensitive and have voluntarily restricted themselves from conventional interest based banking. Thus expansion of Islamic banking industry has prospects to increase the financial inclusion (KAP Study, 2014).

2.3. The role of gender in technology adoption

Studies examining the role of gender signifies how personal traits and gender difference are critical to the perception and usage of new technologies. Prior studies have stated that curiosity to try out new technology are higher in males while females are nervous with the new technology, signifying males show greater confidence and conformability towards new technology adoption (Lu et al., 2006; Whitely, 1997). Venkatesh and Morris (2000) conducted study to see the gender difference in the use of software. By using the extended Technology Acceptance Model (TAM), their findings suggested perceived ease of use was significant factor among females and perceived usefulness as significant factors with the males regarding decision to use software. By integrating Theory of Reasoned Action (TRA) and the TAM with gender as moderator, the work of Nysveen et al. (2005) to examine the factors affecting the usage of mobile chat service. Their findings stated factors i.e. intrinsic motives and social norms significantly influenced females to use mobile chat service. The privacy and security were the key factors for credibility and the level of credibility differ across genders. Cho and Jialin (2008) found that males' tendency to trust were higher than females when carrying e-commerce transactions while Garbarino and Strahilevitz (2004) noted higher perception of risk in females. Concerning the consumer behavior of young adults, Goldgehn (2004) reported innovativeness, self-identities and creativity as key attributes of self- expressiveness and self-expression was found higher in females than males (Plant, 2000).

In the context of mobile banking, Amin (2007) applied framework similar to Nysveen et al. (2005) to inspect factors affecting the usage of SMS mobile banking. His findings revealed that males place greater importance towards perceived system quality and perceived usefulness as compared to females who favor perceived ease of use, social norms and perceived expressiveness factors in usage of SMS banking. In context of mobile banking adoption in

Singapore, the study of Riquelme and Rios (2010) found results similar to Amin (2007) that social norms and ease of use were significantly related to females where as relevant advantage as a key factor for males while deciding to adopt mobile banking. The findings of Nel and Raleting (2010) supported the work of Nysveen et al. (2005) and Riquelme and Rios (2010) that the factor ease of use is a significant determinant of mobile banking adoption in females. In Taiwan, Yu (2012) applied Unified Theory of Acceptance and Use of Technology (UTAUT) to investigate the moderating effect of gender in mobile banking adoption. The findings stated performance expectancy, perceived financial cost and facilitating conditions are the factors that concerns for males and self-efficacy had higher effect on females. The above mentioned studies well documented the role of gender in adoption of m-banking services. Therefore, in order to understand the effect of gender in adoption of Islamic mobile banking services, the present study is carried out to examine the role of gender difference in the context of Islamic mobile banking.

3. Research model and development of hypothesis

For this study, we adopted TAM because it has been extensively applied to examine the technology adoption (Al-Azawei et al., 2017). Also TAM is preferred choice when research cost, parsimony and outcomes are seriously considered (Jokar et al. 2017). 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 (Goh and Sun, 2014; Hanafizadeh et al., 2014; Aboelmaged and Gebba, 2013; Chitungo and Munongo, 2013; Akturan and Tezcan, 2012; Safeena et al., 2012). The importance of TAM frame work is mentioned by Shaikh and Karjaloutu (2015) who, in their study about literature review on mobile banking adoption, found that out of 55 studies conducted between the year 2005 to 2015, 42% researchers used TAM or extended versions of TAM. Figure 1 shows the complete depiction of the research model. The independent variables affecting the dependent 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;

3.1. Perceived financial cost

Besides sociological and behavioral theories to examine individuals' adoption of m-banking, studies have also revealed the impact of financial factors like service fees or transaction fees and cost associated with the use of m-banking (Cruz et al., 2010; Yang, 2009; Amin, 2007; Sulaiman et al., 2007). Perceived financial cost is defined as the degree of an individual perception about cost of using m-banking (Luarn and Lin, 2005). Perceived financial cost has negative impact as in order to use m-banking service, user should have smart phone which certainly has cost (Huili and Zhong, 2011). The negative impact of perceived financial cost was also found by Yu (2012) who conducted the study on intention to adopt to m-banking on 441 participant from Taiwan. Therefore, it can be hypothesized that:

H_1: Perceived financial cost negatively impacts the intention to adopt Islamic m-banking.

3.2. Perceived usefulness

Perceived usefulness is defined as "the prospective user's subjective probability that using a specific application system will increase his or her job performance within an organizational context" (Davis, 1989). In simple words, perceived usefulness is the perception of

person that how well m-banking services are combined with daily activities (Kleijnen et al., 2004). Previous studies have stated perceived usefulness as rational illustration of user willingness to use adopt technology (Alsajjan and Dennis, 2010; Legris et al., 2003). Hence, the following hypothesis can be derived:

H_2: Perceived usefulness positively impacts the intention to adopt Islamic m-banking.

3.3. Social norms

Social norms are "factors that relate to the influence of significant other such as family, relatives or friends, in the decision to use a product or service" (Riquelme and Rios, 2010). In the context of m-banking services adoption, a number of studies confirmed social norms as significant factor (Riquelme and Rios, 2010; Chan and Lu, 2004). In the latest study by Oliveira et al. (2014), social norms are stated as an individual view affected by family or peers associated value towards the usage. Yu (2012) mentioned social norms as the leading influential factor in adoption of m-banking service in Taiwan. Analogous to prior studies, the work of Kleijnen et al. (2004) also found the similar results of the significance of social norms in adoption of wireless finance services. According to the above discussion it is likely that social norms will impact the intention to adopt Islamic m-banking. So, our third hypothesis is:

H_3: Social norms positively impacts the intention to adopt Islamic m-banking.

3.4. Perceived credibility

Goh and Sun (2014) defined perceived credibility as the confidence, an individual have in the system and privacy of information while conducting financial transition. Confidence in the system (security) and privacy have major contributor towards trust and are key determinants in m-banking services adoption (Wang et al., 2003). When it's the matter of trust, the degree of trust is found to vary among gender e.g. in online shopping, Garbarino and Strahilevitz (2003) mentioned men perceive less degree of risk then women. The effect of perceived credibility have been examined and found significant in the context of studies related to adoption of m-banking services (Luarn and Lin, 2005; Amin et al., 2008) as well as the studies on internet banking (Wang et al., 2003; Yuen et al., 2010) which led us to our fourth hypothesis:

H_4: Perceived credibility positively impacts the intention to adopt Islamic m-banking.

3.5. Perceived self-expressiveness

Perceived self-expressiveness is defined as the "importance of social expression of identity and self-identification" (Goldgehn, 2004). It is essential to young adults due to self-identity, high innovativeness, and creativity (Goh and Sun, 2014). Many studies have integrated perceived self-expressiveness with TAM and found significant effect on consumer adoption intentions (Pedersen and Nysveen, 2003; Pedersen, 2005; Nysveen et al., 2005). In addition, studies exploring gender differences in the field of information computer technology (ICT), found females exert higher degree of self-expressiveness than males (Plant, 2000; Soukup, 1999). Here we can postulate that perceived self-expressiveness will impact the intention to Islamic m-banking adoption. Hence, the fifth hypothesis is:

H_5: Perceived self-expressiveness positively impacts the intention to adopt Islamic m-banking.

On the basis of the above literature review and discussion, the study also proposes to include the gender to examine the effect of gender differences. Therefore our subsequent hypotheses are:

H_6: The impact of perceived financial cost on the intention to adopt Islamic m-banking will be stronger in females than males.
H_7: The impact of perceived usefulness on intention to adopt Islamic m-banking will be stronger in males than females.
H_8: The impact of social norms for intention to adopt Islamic m-banking will be stronger in females than males.
H_9: The impact of perceived credibility for intention to adopt Islamic m-banking will be stronger in females than males.
H_{10}: The impact of self-expressiveness for intention to adopt Islamic m-banking will be stronger in males than females.

[Take in Figure 1 here]

4. Methodology

4.1. Participants of the study

The participants of this study were those who are the users of banking services and most of the participants included in the survey were businessmen, students and salaried persons. Questionnaires were gathered from Islamabad, the capital of Pakistan where most of the bank head offices are located. The rationale of choosing Pakistan is consistent with the research suggestion of Shaikh and Karjaluotu (2015) to include developing economy due to its huge potential for intention to m-banking adoption. Additionally, Pakistan is a developing country and the access rate of mobile phone among the adults population is 80% with significant disparity of 42% gender gap in mobile access between it males and females (Financial inclusion insights, 2014). Further adding, compare to younger population (age 20-24) with older age, youth have 70% more access of mobile phone. In terms of active mobile usage Pakistan is ranked 8th in the world with approximately 140 million active users of mobile (Pakistan Telecommunication Authority Annual report, 2014). According to state bank of Pakistan annual report (2015), more than 8 million users conducted transections using m-banking services as compared to 1.4 million in 2009. This shows tremendous growth in the usage of m-banking which attracted significant attention of many banking institutions. The above figures regarding gender gap in mobile access rate and huge demand for m-banking services create the potential research gap and latitude of improvement in banking industry of Pakistan that led the authors to conduct present study. Therefore it is important to examine how gender differences are critical in the growth of Pakistan's Islamic banking industry. In specific when growth of Islamic banking is rapid and outpacing its competitors (conventional banking)

4.2. Sampling technique and sample size

The sample was collected using convenience sampling method due to the unavailability of complete details about the customers of the banks. Banks normally do not disclose the information about their customers to maintain privacy. Therefore, researchers decided to apply convenience sampling for the collection of data. The sampling method used in this study has also

been implemented in several prior studies (e.g. Chen, 2008; Al-Jabri and Sohail, 2012; Afshan and Sharif, 2016). The questionnaire was given to the participants after explaining the purpose of the study and getting their consent. Total questionnaires were distributed to 300 participants. 37 cases were dropped out due to unengaged responses while 20 questionnaires were not returned. After screening and scrutiny of questionnaires, the final sample size left for analysis was 243 cases. For the analysis of data in SEM, a sample size of at least 200 respondents in more absolute terms or 5 to 10 cases per parameter is recommended (Kline, 2011). Even for the small sample size ranging from 50 to 100 respondents, the SEM model works well (Afshan and Sharif, 2016; Iacobucci and Churchill, 2010). Therefore, 243 sample size was fairly enough to apply for SEM analysis and generalizability of the study. Table 2 presented the summary of demographic composition of participants.

[Take in Table 2 here]

4.3. Measurement scale

The items must represent the construct to make sure the content validity of the measurement scale on which generalization can be made. Thus, to ensure the content validity, the measurement scale was adapted from the prior technology adoption studies which already validated theses constructs and reported higher values of alpha reliability (Luran and Lin, 2005; Pederson and Nysveen, 2003; Sun et al., 2012; Goh and Sun, 2014). The measurement scale for perceived financial cost, perceived usefulness, social norms and perceived self-expressiveness were adapted from Sun et al. (2012). The Cronbach's alpha reliability values were reported 0.88, 0.80, 0.84 and 0.88 respectively. The measurement scale for perceived credibility and Intention to adopt were adapted from Goh and Sun (2014). The Cronbach's alpha reliability values were reported 0.81 and 0.97 respectively. The questionnaire was consisted of two parts. First part contained the demographic composition of the respondents while the second part comprised measurement scale. A five-point Likert scale ranging from strongly Disagree (1) to strongly agree (5) was use to get responses.

5. Data analysis and results

SPSS 21 and AMOS 21 have been used for data analysis and testing the hypothesis.

5.1. The descriptive statistics and alpha reliability

Descriptive statistics (mean, standard deviation) and alpha reliability values of constructs are shown in Table 3. All the construct were sufficiently reliable as the Cronbach's alpha reliability values were above the recommended threshold level of 0.60 (Nunnally and Bernstein, 1994). The results suggested that construct can be used for analyzing the model.

5.2. Exploratory factor analysis (EFA)

For EFA, Kaiser–Meyer–Olkin (KMO) and Bartlett's test of sphericity in combination of promax rotation and maximum likelihood method based on Eigenvalues greater than 1 were applied using SPSS 21. Whether the sample is adequate for factor analysis, the KMO test resulted 0.753 which is above the recommended threshold level of 0.70 suggesting that sample of the present study is suitable for factor analysis (Leech et al., 2005). Where the result of Bartlett's test of sphericity (Approx. Chi-Square 1459.6, df=120) is the evidence of significantly ($p<0.000$) dissimilar correlation matrix from identity matrix and non-zero correlation between variables (Leech et al., 2005). Promax rotation resulted in final 15 items shown in Table 3.

5.3. Convergent and discriminate validity

The factor loading, composite reliability (CR) and average variance explained (AVE) are shown in Table 3. All the loadings were above the threshold level of 0.55 (Tabachnick and Fidell, 2007). Regarding convergent validity, measurement scale is reliable if the values of CR and AVE are above the recommended level of 0.7 and 0.5 (Bagozzi and Yi, 1988; Gefen et al., 2000). Discriminant validity is required to ensure that measurement scale does not correlate with other variables to whom it should differ. The scale exhibited good discriminant validity as square root of AVE is larger than its coefficient of correlation with other factors (Gefen et al., 2000). Table 4 validates the discriminant validity because all the square root of AVE are larger than its coefficient of correlation.

[Take in Table 3 here]

[Take in Table 4 here]

5.4. Configural and metric invariance test

As the current study utilized two group comparison (males and females), data was analyzed for configural and metric invariance test. By splitting sample data in two groups according to their gender (males and females) using AMOS 21 and configural invariance test was performed. The adequate goodness of fit is found by analyzing freely estimated model across two groups (CFI=.935, Pclose=.504, RMSEA=.048, SRMR=0.0587). The metric invariance test was performed by limiting the two groups (males and females) 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=0.207).

5.5. Common method bias

Common Method Bias (CMB) is the "variance that is attributed to the measurement method rather than to the construct of interest" (Bagozzi and Yi, 1991). Several studied highlighted CMB issue that it may pose significant validity threat and lead to erroneous conclusions (Craighead et al., 2011; Burton-Jones, 2009). In order to deal with this issue unmeasured latent method construct (ULMC) approach was performed in Amos 21 where the unconstrained common method factor model was compared with zero constrained common method factor model (Podsakoff et al., 2003; Richardson et al., 2009). The chi-square difference test was found insignificantly different from zero (chi-square difference=37.345, difference in df=28, p-value=0.111) suggesting that study was reasonably free from common method bias.

5.6. Confirmatory Factor Analysis (CFA)

CFA was conducted with fifteen final loaded items that resulted six factors namely perceived financial cost (PFC), perceived usefulness (PU), social norm (SN), perceived credibility (PC), perceived self-expressiveness (PSEXP) 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 and Fan, 1997). Table 5 lists actual and recommended values of some model fit indices. All the values lies under the recommended values which shows good model fit.

[Take in Table 5 here]

5.7. Structural equation modeling (SEM)

For SEM analysis, present study followed two step procedure of Anderson and Gerbing (1988). First, measurement model was obtained for both the females and males. In second step, the structural model was obtain using bootstrapping to test the path analysis.

5.7.1. Measurement model

For each gender group, internal reliability and convergent validity, composite reliability (CR), average variance explained (AVE) and standardized loadings were assessed. The results are shown in Table 6 and 7. The internal reliabilities along with convergent validity for both male and female samples were found good as all values of AVE, CR and loadings are above the threshold level of 0.50, 0.70 and 0.55 (Bagozzi and Yi, 1988; Gefen et al., 2000; Tabachnick and Fidell, 2007). To test discriminant validity, square root of AVE was higher than inter-correlation among the constructs which suggested good discriminant validity (Gefen et al., 2000).

[Take in Table 6 here]

[Take in Table 7 here]

5.7.2. Structural model

To evaluate the structural model and test hypotheses of the study, path analysis and significance of path coefficients were tested. In addition, 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. Figure 2 and 3 showed the structural model for both gender. The summarized results are shown in Table 8 for both males and females. The model for males group sample explained (R^2= 0.557) 55.7% variance and females model explained (R^2= 0.248) 24.8% in intention to adopt Islamic m-banking. This suggests that model is more suitable for males. To test the significance of path differences between males and females, chi-square difference test was applied. Table 9 shows the values of significance of path differences.

[Take in Figure 2 here]

[Take in Figure 3 here]

[Take in Table 8 here]

[Take in Table 9 here]

6. Discussion and conclusion

The path for perceived financial cost was found positive but insignificant ($p\text{-}value_{males}=0.218$; females $p\text{-}value_{females}$=0.257) for both males and females (β_{males}=0.151; $\beta_{females}$=0.145) which led our hypothesis H_1 rejected. Comparing the intensity of path differences of the construct perceived financial cost, the effect of gender was also found insignificant ($p\text{-}value$=.385). Hence our H_6 was also rejected. We can conclude that financial costs was not the important concern for adoption of Islamic m-banking for both genders in Pakistan. These findings were contrary to the results of Goh and Sun (2014) and Amin et al. (2008). In their study, gender difference existed while considering financial cost for Islamic m-banking adoption.

The possible explanation can be given that the financial costs in South Asia are low (Economist, 2010) that is why, it is not a major concern for both males and females in Pakistan.

Moreover, the effect of perceived usefulness on male users (β_{males}=0.393) was found significant ($p\text{-}value_{males}$<0.001). Even though the path was found positive for female users ($\beta_{females}$=0.154) but it was insignificant ($p\text{-}value_{females}$=0.149). As a result, H_2 was accepted for males but rejected for females. These findings supported the studies of Hashim (2008), Amin (2007) and Venkatesh and Morris (2000). In their study they stated that the effect of perceived usefulness in intention to m-banking adoption have stronger influence on males than females. The likely reason can be exerted that wireless banking is diligently goal driven and males are more goal–task oriented than females (Cruz et al., 2010). Further, the intensity of path difference among genders was found significant ($p\text{-}value$<.05) leaving our H_7 accepted. Hence we can conclude that perceived usefulness affects positively in the adoption of Islamic m-banking in Pakistan and its influence on male is found higher than females.

Additionally, the effect of social norms on intention to Islamic m-banking adoption was found positive (β_{males}=0.337; $\beta_{females}$=0.361) and significant ($p\text{-}value_{males}$<0.001; $p\text{-}value_{\text{females}}$<0.001) for both genders. Thus, H_3 was accepted. For comparing the intensity of path difference among both gender, it was found insignificant ($p\text{-}value$=0.251) which led our H_8 rejected. These findings were found contradicting to the studies of Goh and Susan (2014), Hwang (2010) and Amin (2007). In their studies they stated the influence of social norms in intention to m-banking adoption have stronger impact on females than males. Therefore, we can conclude that social norms influence the adoption of Islamic m-banking in Pakistan and there exists no gender differences.

Furthermore, the impact of perceived credibility in the adoption of Islamic m-banking was also found significant ($p\text{-}value_{\text{females}}$<0.01) among females ($\beta_{females}$=0.187) than males ($\beta_{males}$=-0.079, $p\text{-}value_{males}$=0.286). Hence, H_4 was accepted for females rather males. Further, comparison for intensity path difference, analysis resulted in significant ($p\text{-}value$<0.05) differences between males and females. Which led our H_9 accepted that females have more concerns for credibility. These findings were contrary to the study of Goh and Susan (2014). In their studies perceived credibility was reported having no impact on Islamic m-banking adoption and males have higher concerns for credibility. However our findings suggested that credibility has no main concerns among males in Pakistan. The possible elucidation may be given that females in Pakistan, due to lack of IT knowledge are impacted by credibility (privacy and trust) which effect their decision of adoption of Islamic m-banking.

Further, the effect of perceived self-expressiveness was found significant ($p\text{-}value_{males}$<.05; $p\text{-}value_{females}$=0.613) for males (β_{males}=0.183) than females ($\beta_{females}$=0.046,). In addition, the compression of path difference was also found significant ($p\text{-}value$<.05) for both genders. Thus, both of our H_5 and H_{10} were accepted. These findings supported the study of Goh and Susan (2014) where attributes of self-expressiveness i.e. desire of personality and status and values influence male more than females to adopt Islamic m-banking.

Summing up, the present study revealed two interesting and different models to examine the acceptance of Islamic m-banking in Pakistan. The males' model (figure 2) suggested three factors i.e. perceived usefulness (PU), social norms (SN) and perceived self-expressiveness (PSEXP) significantly influence the males. While females' model (figure 3) suggested two factors i.e. social norms (SN) and perceived credibility (PC) that influence the adoption of

Islamic m-banking. However, perceived financial cost (PFC) is not found a significant contributing factor in the acceptance of Islamic m-banking among both genders in Pakistan.

7. Managerial and practical implication

7.1. Managerial implication

The findings from the present study have strong managerial implications for banking industry. M-banking is an emerging technology in Islamic banking industry, therefore, findings represent an initial adopt phase which may be consider an important aspect before making generalization. Our study revealed different patterns of adoption with respect to gender. Banking institutions, by considering the findings regarding the gender differences, may optimize their strategic goal using gender base market segmentation. While designing their promotional and service design, bankers may consider findings of the study to attract females as females are found to give more weightage to credibility and trust. With the aim of attracting males, bankers may market their Islamic m-banking services by explicitly mentioning the features related to perceived self-expressiveness like personality, status and lifestyle. In promotion and marketing of Islamic m-banking services, bankers may demonstrate the attributes of usefulness by showing different easy ways to use of m-banking. Last but not least, the findings may also be suitable for those bankers who wants to explore banking opportunities in Pakistan to take advantage of the gender differences.

7.2. Practical Implication

The findings of this study have also practical implications. The results suggest that females require higher perceived credibility towards adoption of Islamic mobile banking. This shows that there may be huge potential and untapped marketing segment. By focusing on the females, Islamic banks may get more opportunities to increase their m-banking acceptability. The study also provides implication for society. Females are about half of the population of Pakistan and most of them are lagging behind in education, particularly IT related education and computer literacy. The lack of education is attributed to the lower self- expressiveness which suggests a lower confidence level. It is suggested that females should be provided chances on equal basis for study and work to be a productive part of both the society and the economy.

8. Limitations and future research suggestions

The present study have few limitations which may be used as grounds for future research. First, m-banking is in its initial innovative phase and the present study is based on the adoption of m-banking services through smart phones and tablets. Therefore, in this study, the future inventions which do not involve the use of smart phones and tablets for financial transactions are not covered. Second, majority of the sample size for this study was largely based on younger population and students as these reflect the typical consumers (Zhou, 2012). There may be external validity threat that results from the study may be inappropriate to generalize on entire population. Third, the present study gathered date from urban city i.e. Islamabad where most of the banking head office are located. The study ignored rural population due to lack of resources and availability technological products in these areas. Pakistan is a developing country and the majority of rural areas are deprived of many technological products. Future research may include rural population and may also include some comparison of urban-rural behavior in adoption pattern. Lastly, the study is conducted in Pakistan which is ethnically and culturally different

from rest of the Islamic countries. There is a need to investigate the uniqueness of Muslims consumers in Pakistan. Thus future research is suggested to include variables salient to Islamic beliefs such as knowledge of Islamic finance, consumer religiosity or other similar variables.

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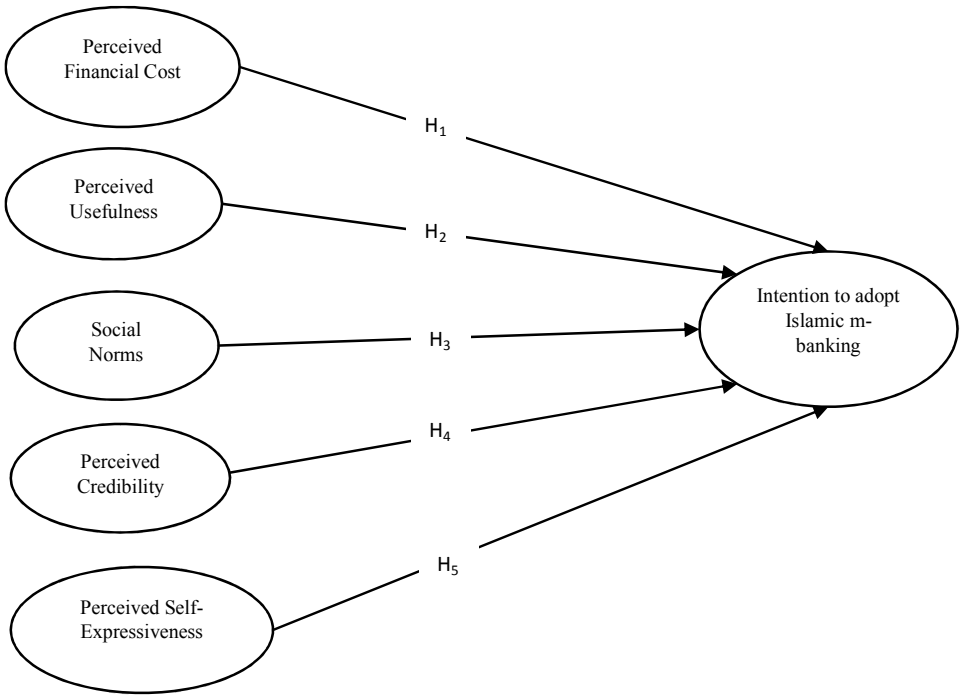

Figure 1: Extended TAM Model

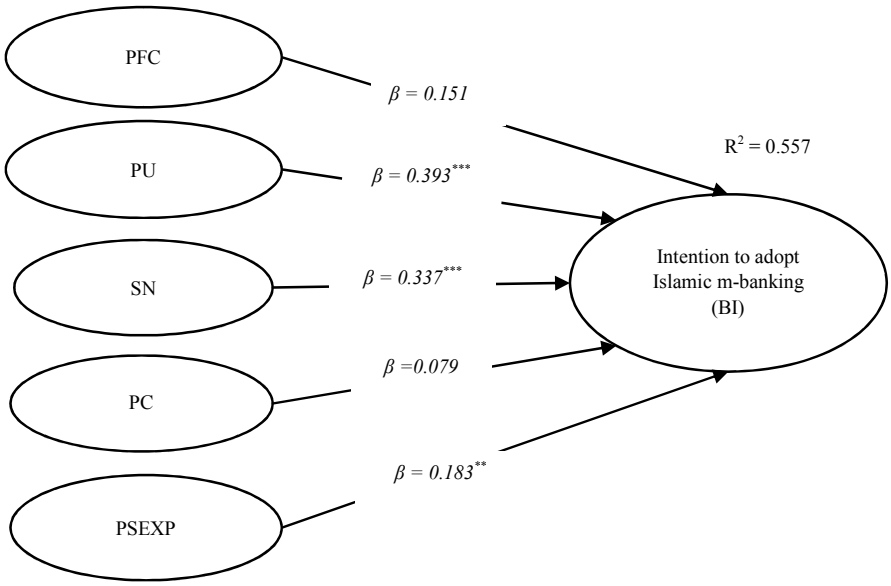

Figure 2: Results of TAM for Males

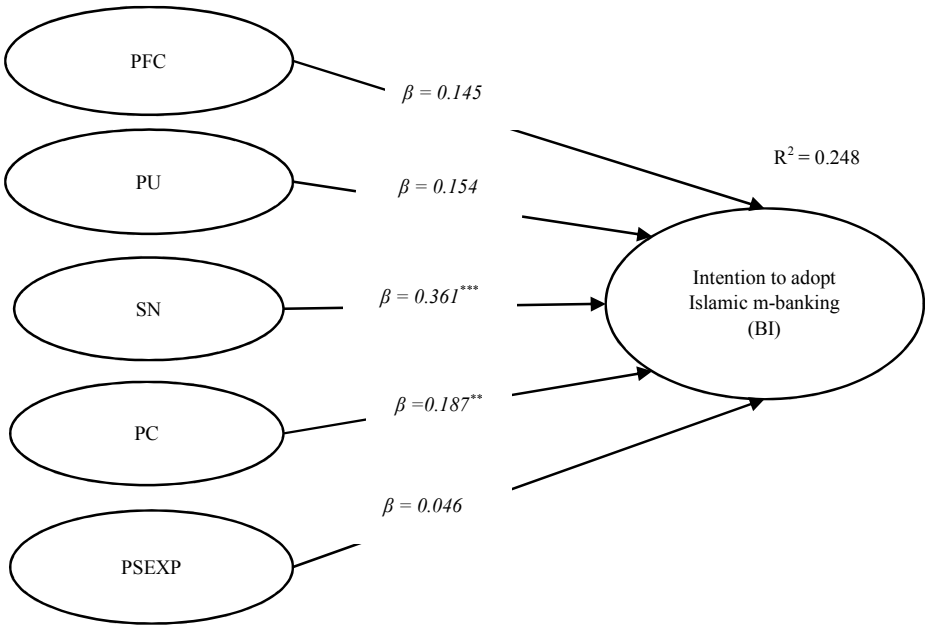

Figure 3: Results of TAM for Females

Table 1
Summary of key 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 2
Demographic composition of data

Gender		Percentage
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	0.8
e) 41 +	2	0.8
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	

Table 3
Mean, standard deviation, alpha reliability, composite reliability (CR) and average variance explained, factor loadings

Constructs	Mean	Std. Deviation	Cronbach's Alpha	CR	AVE	Items	Factor Loadings 1	2	3	4	5	6
Perceived Usefulness	3.023	1.043	0.82	.853	.604	PU1	0.795					
						PU2	0.796					
						PU3	0.786					
Perceived Credibility	2.795	0.996	0.87	.782	.758	PC1		0.896				
						PC2		0.980				
Social Norms	2.844	0.845	0.64	.835	.520	SN1			0.647			
						SN2			0.751			
						SN3			0.792			
Behavioral Intention	3.594	0.974	0.86	.805	.770	BI1				0.679		
						BI2				0.719		
Perceived Self Expressiveness	3.399	0.850	0.64	.724	.514	PSEXP1					0.759	
						PSEXP2					0.772	
						PSEXP3					0.751	
Perceived Financial Cost	3.184	1.067	0.66	.839	.546	PFC1						0.780
						PFC2						0.859

Extraction Method: Maximum Likelihood.
Rotation Method: Promax with Kaiser Normalization.
a. Rotation converged in 6 iterations.

Table 4
Discriminant validity: Square Root Of AVE (Shown In Italics Diagonally) and Factor Correlation Matrix

	PSEX	PU	PC	SN	BI	PFC
Perceived Self Expressiveness	*.717*					
Perceived Usefulness	.085	*.777*				
Perceived Credibility	.004	.422	*.871*			
Social Norms	.266	.283	.113	*.721*		
Behavioral Intention	.212	.537	.331	.527	*.878*	
Perceived Financial Cost	.056	.176	.096	.343	.245	*.739*

Table 5
Model fit indices recommended and actual values

	Cut off values	Actual Values	Reference
Chi-Square/*df*	< 2	1.64	Tabachnick and Fidell (2000)
CFI	>.90	.969	Gefen et al. (2000)
NFI	> .90	.922	Gefen et al. (2000)
RSMEA	< .07	.048	Steiger (2007)
SRMR	< .08	.059	Hu and Bentler (1999)

Table 6
Internal reliability: items loadings, standard error (S.E.) and critical ratio (C.R.)

		Males			Females		
Constructs	Indicators	Loading	S.E.	C.R.	Loading	S.E.	C.R.
Perceived Usefulness	PU1	0.840***	0.061	14.339	0.771***	0.061	14.339
	PU2	0.811***	0.073	13.929	0.770***	0.073	13.929
	PU3	0.733***	0.071	12.606	0.732***	0.071	12.606
Social Norms	SN1	0.777***	0.071	12.854	0.753***	0.071	12.854
	SN2	0.583***	0.076	9.451	0.591***	0.076	9.451
	SN3	0.845***	0.066	14.274	0.831***	0.066	14.274
Perceived Self Expressiveness	PSEXP1	0.707***	0.071	11.239	0.675***	0.071	11.239
	PSEXP2	0.753***	0.061	13.416	0.858***	0.061	13.416
	PSEXP3	0.709***	0.071	11.901	0.741***	0.071	11.901
Perceived Credibility	PC1	0.905***	0.101	11.490	0.880***	0.101	11.490
	PC2	0.907***	0.104	11.701	0.932***	0.104	11.701
Behavioral Intention	BI1	0.972***	0.062	18.510	0.933***	0.062	18.510
	BI2	0.916***	0.056	16.712	0.829***	0.056	16.712
Perceived Financial Cost	PFC1	0.852***	0.095	6.791	0.822***	0.095	6.791
	PFC2	0.632***	0.073	6.175	0.609***	0.073	6.175

*** *p-value < 0.01*

Table 7
Convergent and discriminant validity: composite reliability (CR), square root of AVE (shown in italics diagonally) and factor correlation matrix

	Males									Females								
Factors	CR	AVE	MSV	BI	PU	SN	PSEXP	PC	PFC	CR	AVE	MSV	BI	PU	SN	PSEXP	PC	PFC
Behavioral Intention	.943	.892	.349	*.944*						.875	.779	.176	*.883*					
Perceived Usefulness	.838	.634	.349	.591	*.796*					.802	.574	.092	.304	*.758*				
Social Norms	.784	.553	.309	.556	.444	*.743*				.773	.536	.176	.420	.303	*.732*			
Perceived Self Expressiveness	.767	.523	.144	.379	.208	.374	*.723*			.804	.580	.061	.094	.077	.246	*.762*		
Perceived Credibility	.902	.821	.069	.061	.263	.041	-.017	*.906*		.902	.822	.043	.207	.199	-.019	-.074	*.906*	
Perceived Financial Cost	.716	.563	.097	.229	.312	-.030	-.044	.238	*.750*	.798	.523	.035	.186	.049	.146	.028	.070	*.723*

Table 8
SEM Hypothesis Testing

Hypothesized Paths	Male (Bootstrapping 2000)					Female (Bootstrapping 2000)				
	Path Coefficients	S.E.	C.R.	*p-value*	Supported	Path Coefficients	S.E.	C.R.	*p-value*	Supported
BI<---PFC	0.151	0.231	1.231	0.218	H_1:No	0.145	0.164	1.858	0.257	H_1:No
BI<---PU	0.393	0.119	3.808	***	H_2:Yes	0.154	0.185	1.444	0.149	H_2:No
BI<---SN	0.337	0.127	3.246	***	H_3:Yes	0.361	0.135	3.290	***	H_3:Yes
BI<---PC	0.079	0.082	1.068	0.286	H_4:No	0.187	0.080	2.132	**	H_4:Yes
BI<---PSEXP	0.183	0.117	2.123	**	H_5:Yes	0.046	0.133	.505	0.613	H_5:No

**** p-value<0.01 ** p-value<.05 * p-value<0.10*

Table 9
Intensity of Path Differences

		Evidence (p-value)	Conclusion
BI<---PFC	M > F	.385	H_6: Rejected
BI<---PU	M > F	*	H_7: Accepted
BI<---SN	F > M	.251	H_8: Rejected
BI<---PC	F > M	*	H_9: Accepted
BI<---PSEXP	M> F	*	H_{10}: Accepted

**** p-value<0.001 ** p-value<0.01 * p-value<0.05*