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Determinants of e-banking adoption: A non-users perspective in Pakistan

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(Preliminary draft)

Abstract

This study has attempted on a motivation to identify the factors that determine the intention of non-users of e-banking service in Pakistan. In this sense, the present study has combined Davis's technology acceptance model (TAM) with external factors, namely subjective norm (SN), trust (TR), technological self-efficacy (TSE), internet experience (IE) and enjoyment (ENJ) to introduce an extension of the TAM model for the non-users of e-banking service. The proposed TAM model was evaluated in a sample of 412 respondents under the framework of structural equation modeling (SEM). For this purpose, we have used Analysis of Moment Structures (AMOS) 21 to test the hypothesized model. Overall, the empirical outcome suggests that the ENJ had a greater total effect on perceived usefulness (PU) and perceived ease of use (PEOU) while, SN showed a greater total effect on the intention to use (ITU) the e-banking service. Furthermore, the TAM model in our study has successfully extended in order to predict non-users intention to use e-banking service. The study has offered a new and useful insights in the existing literature of the TAM model, specifically for the non-users perspective.

Keywords: e-banking, technology acceptance model (TAM), behavioral intention, Pakistan.

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1. Introduction

The information technology (IT) is playing a key driving role in the current changing environment of this world. The facts reported by Internet world stats (2008) stated that the 2 billion people are internet users around the globe. This rapid acceptance of internet users has gained the attention of financial service providers. Therefore, many financial institutions offering new customer oriented services and products with the inclusion of informative and system oriented networks (Liao and Cheung, 2002). However, the innovation in business and technology has arrived in providing financial services to the customer (Wang et.al. 2003; Crane and Bodie, 1996). In this sense, financial sector, including retail banks, has understood the importance of IT and started providing electronic banking (e-banking) services in contrast with their traditional banking channels like telephone banking, automated teller machine (ATM) and physical teller counter. Consequently, this technology change has increased the customer demand as well as created more competition among the retail banks (Shah et.al. 2007; Wang et.al. 2003; Lin, 2006). Not only this, the electronic banking also created the opportunity for remote areas where banking services were not easy in the past. So, with the help of electronic banking service, customers can make their financial transactions safely even if they don't want to physically visit the bank branch (Pikkarainen et.al. 2004; Daniel, 1999).

More focus on banking transactions, the traditional channels of banking services has revolutionized by electronic banking (Mols, 1999; Daniel, 1999). Retail banks have transformed there many financial transaction activities using electronic banking (Bradley and Stewart, 2003). It is also to be noted that the electronic banking is a new phenomenon in many countries, but this facility has a significant effect on the banks while delivering quality and innovative services (Kesharwani and Singh, 2012). Additionally, electronic banking requires customer understanding and mental satisfaction towards the service. Gorbacheva et.al. (2011) and Cullen (2001) identified that the technological advancement faces hurdles in achieving its objectives in the presence of limited exposure of the web based service. Hence, a proper understanding of the system knowledge is required in order to deliver the electronic banking service among the potential customers.

What is E-banking?

E-banking is a term which is explained as customer enjoyment of banking services electronically, without the having physical appearance to the bank branch. It is also sometimes regarded with internet banking, home banking, virtual banking, online banking, remote electronic banking and personal computer banking (Abbad, 2011). E-banking provides a wide range of financial services, namely, ATM services, fund transfer, utility bill payment and online payments (Kolodinsky et al. 2004). One study of Gopalakrishnan et al. (2003) suggest that e-banking is a remote facility to perform banking services using the internet. As far as our study concern, customer fulfill his banking transaction needs without having the physical presence in the bank outlet. In Pakistan, the branch based banking is considered as the most widespread channel to provide banking services for the consumers. But, the rapid changes in IT have attained the importance of electronic banking (Abbad, 2011). The retail banks in Pakistan are now involved in delivering quality services through the electronic banking service. In addition, these retail banks are able to manage their quality of banking operations as well as cost reduction that ultimately extends customer satisfaction.

E- Banking benefits

The benefits of e-banking are twofold. First, it provides secure and easy methods of banking electronically to the customer. Second, it offers many benefits to the retail banks to gain more customers as well as a competitive advantage in the market. One can believe that, all the banking transactions can be done with the use of e-banking just on a single click. This prompt response make life easier and save time and cost. In the context of customer intention, factors like availability, cost and time savings, convenience, security and speedy financial transaction solutions are the key benefits. On the other side, barriers in physical location of branch network, improvement in customer services, efficient banking services and cost reduction are the important benefits for retail banks. However, the e-banking benefits are considered as ineffective if the customer paid less attention towards this service. It is also to be noted that, many customers prefer physical visit of bank branch for their financial transactions. These preferences of the customer are due to several reasons. First, they may have a habit of performing banking transactions with work and shopping. Second, the branch staff and physical environment give them a feeling of satisfaction. But, it is a due fact that the preferences of customer changes by the

time as more convenient and secure way of banking are provided by e-banking services. Also, new generations may replace old banking method of adopting e-banking services as they are considered as more familiar with the internet.

E-banking in Pakistan

In Pakistan, the retail banking sector has successfully introduced the electronic banking service to gain more competitive advantage in the market (Raza and Hanif, 2013). The vital benefits of this service have been adopted by both local and foreign banks in Pakistan (Howcroft et.al. 2002; Nui-Platoglu and Ekin, 2001; Black et.al. 2002; Khan, 2009). According to the State bank of Pakistan (2011), the majority of the commercial banks opened their new banking outlets using electronic banking services. Furthermore, 7,036 retail bank branches are delivering electronic banking service out of 9,483 branches while a significant amount of PKR 44.75 billion have been transacted. More recently, the growth rate in e-banking has jumped to 16 percent with the increase of over 6 percent in the volume. More recently, State bank of Pakistan has also set up a guideline and a mechanism for the retail banks so that they can make more secure and easy methods of e-banking service. In this regard, financial transaction system is gradually transforming into electronic banking from the paper based mechanism. This e-banking channel follows real time online banking (RTOB), Internet banking, ATMs, call centers and mobile banking. The State bank of Pakistan (SBP) also managed “large value payments” and “lower value payments”. The large value payments are managed by SBP via real time gross settlement system (RTGS) which is usually designed to facilitate the financial markets. On the other side, the lower value payments are consumer based payments and conducted through two different channels. First, the paper based mechanism (which include, demand drafts, cheques, money transfers, payment orders etc.). Second, electronic channels (such as, point of sale (POS), RTOB, internet banking, ATMs etc.). In sum, fig-1 depicts the composition of retail bank transactions made by customers FY- 2014. The Fig-1 also highlighted the importance of e-banking in Pakistan. Over the past five years, e-banking has gained a significant growth in the country while the consumers are more reluctant to perform their financial transactions via this service.

<Insert fig-1 here>

Despite of these facts, recent facts suggest that the e-banking service transactions has shown some declining trend in Pakistan (State bank of Pakistan, 2014). In the year 2014, the volume of e-banking transactions has lower down from 6.16 million to 6.14 million, while the e-banking registered users have increased by 36 percent. In addition, the amount of PKR 32 billion e-banking transaction has been reported at the end of last quarter FY15. Overall, e-banking has played a vital role in retail banking in Pakistan and it further required empirical literature support to be more cost-effective.

In the past, many studies have been conducted to examine the customer adoption towards e-banking (Raza and Hanif, 2013; Nasri, 2011; Safeenaet.al. 2011; Chong et.al. 2010; Malhotra and Singh, 2010; Ho and Lin, 2010; Mirzaet.al. 2009; Gounaris and Koritos, 2008; Chandioet.al. 2013 and many more). But, these empirical researches have dealt only customer intention towards e-banking without considering the non-users perspective. One study of Abbad (2011) stated that there is a need to investigate that why some retail bank customers avoid using e-banking. In recent times, e-banking literature is fragmented and it further requires modifications in the TAM model by exploring some significant drivers specifically in developing countries (Shaikh and Karjaluo, 2015). Concerned with these arguments, this study further raised an issue regarding the adoption of e-banking services in the context of non-users. Additionally, Chandio et.al. (2013) also highlighted a fact that the underutilization of e-banking services is still a problem in Pakistan and required further investigation while Afshan and Sharif (2015) also suggested the importance of e-banking service for developing countries like Pakistan. It is also to be noted that the non-users of e-banking may be the potential users of this service, which may contribute to increase the number of existing customers. So, the authors of this study, understand the crisis of insufficient use of e-banking by the customers of retail banks. In recent times, to the best of the author's knowledge, no such study has been conducted in Pakistan to examine the behavioral intentions of non-users towards e-banking. Therefore, it is considered that there exists a need of this study to empirically analyze the non-users intention towards the adoption of e-banking services. For this reason, we have employed a technology adoption model (TAM) which is further extended by introducing new but relevant factors for technology adoption.

Motivation of the study

Previously, most of the empirical studies have investigated the customer adoption towards e-banking in the perspective of existing mobile banking users. In addition, many studies have focused the customer adoption in developed countries. Less empirical work has attempted in developing countries to determine the behavioral intention of consumers towards e-banking specifically, a non-user of this service. Based on past literature support, e-banking is lacking with non-users perspective investigation. Therefore, we conducted a study to counter this issue and developed a new model for e-banking adoption which is based on the TAM model. Also, we consider this study as it laid a new ground for future studies in view of non-users of e-banking.

This study has organized in 5 sections. The first section discusses with an introduction followed by chapter 2 as Theoretical background and literature review; chapter 3 deals with methodology; chapter 4 presents the data analysis and the last chapter 5 explain conclusion and policy implication section.

2. Theoretical background

Generally, technology acceptance studies surround with four research models. The theory of reasoned action (TRA) is the first model which is developed by Fishben and Ajzen in 1975. This model is further extended by Fishben in 1985 and named as the theory of planned behavior (TPB). The second model is the technology acceptance model (TAM) which is also based on the TRA model. The TAM model was initially developed by Davis (1986) and proposed two major constructs namely, perceived usefulness (PU) and perceived ease of usefulness (PEOU). These variables are considered as the fundamental constructs of the TAM model which reflects the acceptance of technology. The third model is known as TAM2 model which is an extension of the TAM model. This model is proposed by Venkatesh and Davis (2000) and validate the one's intention to use in the context of the cognitive instrumental procedure and social influence. The fourth model is an innovation diffusion theory (IDT) which was introduced by Rogers (1995). This model is based on five stages, namely, knowledge dissemination, persuasion, decision, implementation and confirmation. In sum, these four models are used to determine the actual usage behavior of a person.

In this study, we have proposed a conceptual model which is followed by TAM (Davis et.al. 1989). The TAM model is widely used in technology adoption researches due to its robustness, predictive power and simplicity (Venkatesh and Bala, 2008; Mathieson et.al. 2001; Abbasi et.al. 2011; Cheng et.al. 2006). However, Wang et.al. (2003) and Moon and Kim (2001) argued that the adoption of technology is a variable factor and rely upon the research context. This argument signifies that the main constructs of the TAM model (PU and PEOU) becomes less predictive an individual's acceptance towards e-banking. Based on this fact, we have proposed a new research model of customer adoption towards e-banking in the framework of the TAM. Therefore, our hypothesized model suggests that the behavioral intention to use (ITU) is associated with seven factors, namely, perceived usefulness (PU), perceived ease of use (PEOU), subjective norm (SN), trust (TR), technological self-efficacy (TSE), internet experience (IE) and enjoyment (ENJ). Furthermore, we hypothesized that the main constructs of TAM i.e. PU are affected by SN, TR, TSE, IE and ENJ while PEOU is determined by TR, TSE, IE and ENJ.

Literature review

Subjective norm

A perception of an individual that the people that are important to him suggest that whether to perform or not a certain behavior (Fishben and Ajzen, 1975). Past literature exhibits mixed results between SN and ITU. Some studies argued that the SN has no significant impact on the intention to use (Venkatesh and Davis, 2000; Ali and Raza, 2015; Lewis et.al. 2003; Chau and Hu, 2001). In contrast, other studies also report that the SN has a significant effect on the intention to use (Teo and Pok, 2003; Venkatesh and Davis, 2000; Amin et.al. 2011; Taylor and Todd, 1995; Abbad, 2011).

On the otherside, Venkatesh and Davis (2000) study established a relationship between SN and PU in TAM2. It is also to be noted that the SN is considered as the weakest factor in the TPB model (Ali and Raza, 2015; Hu and Chau, 2001; Abbad, 2011). Moreover, behavioral intention of a person cannot be determined through SN (Davis et.al. 1989). But, some studies argued that SN and PU have a significant relationship (Ajzen, 1991; Riemenschneider et.al., 2003; Venkatesh and Davis, 2000; Taylor and Todd, 1995). Hence, our study hypothesized that SN will significantly affect the PU and ITU.

Trust

One study of Mayer et.al. (1995) define trust as “the willingness of a party to be vulnerable to the action of another party based on the expectation that the other will perform a particular action important to the trust or irrespective of the ability to monitor or control that other party”. In our study context, the willingness of a customer is associated with the usage of internet based service while the performance of an action is expected. Clarke (1997) stated that the trust play an instrumental role in determining the acceptance towards e-banking. Other studies, like Gefen (2003); Chandio et.al. (2013) and Abbad (2011) also include this factor in the TAM for internet based services. In our study, we hypothesized trust as an antecedent of POEU and PU and has significant relationship, which in turn affect the ITU.

Technological self-efficacy

Self-efficacy is associated with an individual’s belief that one requires some attainments for which he designed and execute a plan of action (see Bandura 1997. p.3). This factor can be used to understand the human attitude and performance in several different contexts (Chandio et.al. 2013). Past empirical studies used self-efficacy in internet based studies and found a key factor to determine the intentions towards the usage of the service (Compeau and Higgins, 1995a and 1995b; Chandio et.al. 2013; Gist et.al. 1989). Markas et.al. (1998) presented their work to differentiate between self-efficacy for specific task and self-efficacy for general computer. The general computer self-efficacy is explained as “an individual’s judgment of efficacy across multiple computer application domains’. Later on, it is further described as “task specific computer self-efficacy”. Marakas et.al. (1998) further define this term as an individual ability of perception to do tasks that are related to computer. Therefore, this study uses general computer self-efficacy and is termed as technological self-efficacy (TSE).

Previous investigations have widely used TSE in several different contexts. Igbaria and Livari (1995) used TSE in computer usage; Roca et.al. (2006) and Ong et.al. (2004) adopted TSE to explain e-learning adoption; Yi and Hwang (2003) applied this factor for web based internet usage; Hsu and Chiu (2004) used TSE to describe the acceptance of electronic services and the online banking information system study is explained by Chandio et.al. (2013) with TSE. Thus, the above healthy literature strengthened the importance of the TSE factor in order to determine one’s intention towards the usage of e-banking. As far as our research concern, TSE is

hypothesized to affect PU and PEOU. Previous studies also proved the relationship between TSE with PU and PEOU (Venkatesh and Davis, 1996; Hong et.al. 2002; Chandio et.al. 2013; Chau, 2001; Venkatesh, 2000).

Internet experience

Technology acceptance research has a significant relationship with the user experience of the internet. This factor has been widely used to determine the intentions of internet users (Speier and Venkatesh, 2002; Harrison and Rainer, 1992; Zmud, 1979; Venkatesh and Davis, 2000; Abbad, 2013; Igbaria et.al. 1995). Previous researches also stated that an individual acceptance towards technology may differ from each other (Zmud, 1979; Igbaria et.al. 1995). In this sense, these empirical investigations have identified the experience of internet use as a key determinant of intentions under the umbrella of PU and PEOU (Abbad, 2013; Agarwal and Prasad, 1999; Chau, 1996). In addition, as long as people become more familiar with the internet usage, their favorable perception develops with ease of use (Hackbarth et.al. 2003). Similarly, Liao and Cheung (2001) study report that the internet experience is a key antecedent of intention to use e-shopping. One study of Anandarajan et.al. (2000) suggest that an individual time spending on the internet is associated with his PU while the PEOU is positively linked with internet based business. Therefore, our study concluded the internet experience as an external factor and hypothesized that the prior internet experience has a significant effect on the PU and PEOU of an individual towards e-banking service.

Enjoyment

Enjoyment is explained by the perception of an individual towards using a computer in his own way (Davis et.al. 1992). The user PU is linked with the enjoyment as an extrinsic motivator while an intrinsic motivation can be seen with PEOU towards the use of e-banking. The adoption of IT based service may increase if the usage of the system is more enjoyable (Davis et.al. 1992). In earlier researches, this factor has been reported in several different contexts (Moon and Kim, 2001; Agarwal et.al. 2000; Toe et.al. 1999, used as internet usage; Lee (2006) applied this factor in e-learning system; Igbaria et.al. (1997) have tested in the use of the personal computer; Venkatesh and Davis (2000) reported in enterprise applications study. Concern with e-banking studies, Yi and Hwang (2003); Pikkarainen et.al. (2004); Abbad (2013)

has successfully established the relationship between enjoyment with PU and PEOU. Thus, the authors of this study have incorporated enjoyment as an explanatory factor of PU and PEOU, which in turn effect the intention to use of e-banking.

ITU, PU and PEOU

The previous models of TRA and TAM have been compared by Davis et.al. (1989) and included the behavioral intention to use. Their remarkable finding suggests that PU and behavioral intention has a strong and significant relationship. Evidence presented in their study further report that PU explain 57% of behavioral intention. Based on the TRA, TPB and TAM conceptual framework, the actual use of a service or product is mainly predicted by the behavioral intention. (Davis et.al. 1989; Ajzen and Fishben, 1980; Ajzen, 1975; Ajzen, 1985). On the same node, PU and PEOU are the key predictors of user intention to use (Davis, 1989). In addition, the TAM was further extended by Venkatesh and Davis (2000) by including PU to examine the effect of this construct in IT. Thus, our study uses ITU, PU and POEU as the key determinants of the TAM model to show the inconsistency in the literature of e-banking.

Development of the hypotheses

Based on previous empirical studies, this study tests the following hypotheses;

- H1: Subjective norm will have a significant effecton the intention to use e-banking.
- H2: Subjective norm will have a significant effect on the perceived usefulness.
- H3: Trust will have a significanteffect on the perceived usefulness.
- H4: Trust will have a significanteffecton the perceived ease of use.
- H5: Technological self-efficacy will have a significant effect on the perceived usefulness.
- H6: Technological self-efficacy will have a significant effect on the perceived ease of use.
- H7: Internet experience will have a significant effect on the perceived usefulness.
- H8: Internet experience will have a significant effect on the perceived ease of use.
- H9: Enjoyment will have a significant effect on the perceived usefulness.
- H10: Enjoyment will have a significant effect on the perceived ease of use.
- H11: Perceived usefulness will have a significant effect on the intention to use e-banking.
- H12: Perceived ease of use will have a significant effect on the intention to use e-banking.
- H13: Perceived ease of use will have a significant effect on the perceived usefulness.

3. Methodology

Instrumentation

To collect the data, we have adapted questionnaire items from previous empirical studies. Venkatesh et.al. (2000); Davis et.al. (1989) and Davis (1989) study was used to gather PU and PEOU items while, ITU items were collected from Venkatesh and Bala (2008) and Davis (1989) studies. Doney and Cannon (1997); Gefen et.al. (2003); Morgan and Hunt (1994) and McKnight et.al. (2002) literatures were adapted for TR items. The TSE items were gathered from Ong and Lai (2006); Compeau and Higgins (1995) and Venkatesh et.al. (2003) literature. SN items were collected from Ramayah and Suki (2006) and Taib et.al. (2008) work, whereas, Sun and Zhang (2006) study was used for ENJ items. The collection of IE items was done using Venkatesh (2000) study. In addition, we have used 5-point likertscale ranging from 5 as “strongly disagree” and 1 as “strongly agree” for the perception of our respondents. We have also included the demographic information of respondents in the questionnaire. Our instrument had a total of 35 items which fulfills the minimum criteria of Hair et.al. (2006). A pilot testing was also conducted to determine the possible problems related to the questionnaire. Overall, the respondents of pilot testing were agreed and validate the understanding and usefulness of the instrument. In the last, the questionnaire items were constructed in the English language while the content and construct validity was also confirmed by academic and market expert.

Sampling and Data collection

This study has targeted the non-users of e-banking service due to the study objective. The participation of the respondents was voluntary and they were treated as politely to fill the questionnaire. All the participants were bank customers and have some knowledge about internet service. Additionally, we have applied non-probability sampling technique (convenience sampling) for data collection because it comply with Banking and financial institution Act 1989 (BAFIA). The law stated that, the financial institutions can not disclose any information related to the customer and they are responsible for it. During the survey period, a total of 425 questionnaires was distributed in which 13 responses were excluded from the study as they found incomplete and missing data. The possible reason could be that, the respondents were in a rush and they showed less interest to participate in the survey. However, we fulfill the minimum criteria of sample size, suggested by Comrey and Lee (1992) as a sample of 300 or more is

acceptable. Thus, we used 412 responses and the summary of the respondent's profile is displayed in table-1.

4. Data analysis

Respondent's profile

Table-1 further depicts that most of the participants in our study were male (68%) while the rest of the respondents were female (32%). We found 57% single respondents and 43% were married. The age group of respondent's participation in the study was categorized as less than 20 (6%) followed by 20-30 age (29%); 31-40 (35%); 41-50 (25%) and 50 or above (5%). On the basis of education level, most of the respondents were graduate (41%) followed by secondary school (21%); postgraduate (17%); diploma (16%) and primary school (4%). During the data collection process, the majority of the respondents were private employee (46%) followed by business man (27%); student (19%) and government employee (8%). In our demographic analysis, the study has also presented respondent's familiarity with the internet. For this purpose, most of the respondents used the internet at home (41%) while 45% of the respondents have 5 or above years of internet using experience. The further demographic description of respondents is displayed in table- 1.

<Insert table-1 here>

Reliability test

To test the internal consistency of our data set, we applied reliability test analysis and used Cronbach's alpha value. This test signifies the consistency between the measures of the same thing (Black, 1999). In addition, the reliability analysis should also be done for the data validation (Nunnally, 1978). Our estimations show that the Cronbach's alpha value ranging from 0.61 to 0.83 in the study. Furthermore, we consider our construct, measure as reliable which allow us to proceed with further analysis, while it also satisfy the minimum threshold level of 0.60 suggested by Hair et.al. (1998). Thus, the results of reliability test are reported in the table-2

<Insert table-2 here>

Kaiser–Meyer–Olkin (KMO) and Bartlett’s tests of sampling adequacy

The sampling adequacy of the data is measured through KMO test statistics. Kaiser (1974) study suggested the minimum criteria for sampling adequacy is; 0.90 or above as “Marvelous”, 0.80 to 0.89 as “very good”, 0.70 to 0.79 as “Good”, 0.60 to 0.69 as “Acceptable”, 0.50 to 0.59 as “Miserable” and 0.50 or less is considered as “Unacceptable”. Additionally, the null hypothesis for correlation matrix about its diagonal form can be confirmed by the Bartlett’s test of sphericity value. In this regards, the high correlations in principal component analysis (PCA) is required along with smaller p-value and greater test statistic value to reject the null hypothesis.

In our findings, the KMO value is 0.75 which fulfills the minimum criteria set by Kaiser (1974) for sampling adequacy of the data. This result also revealed that each variable in the factor analysis has sufficient items to make groups. On the other side, we found the significant p-value (0.000) for Bartlett’s test of sphericity at the 5 percent level of significance. This means that the variables, correlation are adequate for factor analysis. Thus, the results for KMO and Bartlett’s test is reported in table-3.

<Insert table-3 here>

Exploratory factor analysis (EFA)

Factor analysis is a statistical technique which is used for data reduction. This technique is also used to determine the underlying relationship among the measured variables. Most of the researchers applied EFA to develop a measuring scale for their research study (Ali and Raza, 2015a, 2015b; Raza and Hanif, 2013; Ali et.al. 2015; Amin et.al. 2011 and many more). In the year 1991, Emory and Cooper suggest that the belongings of the constructs are identified by factor analysis. In this study, the principal component analysis has been used to assure the construct validity of the items. Out of 35 items, we found 33 items were loaded and divided into eight factors. These factors include, perceived usefulness (PU), trust (TR), intention to use (ITU), technological self-efficacy (TSE), perceived ease of use (PEOU), subjective norm (SN), internet experience (IE) and enjoyment (ENJ). Furthermore, the factor loading in our estimations are ranging from 0.60 to 0.89. These factor loading values obeys the criteria set by Hair et.al. (1998), suggest that, a sample of 350 or above should have 0.30 factor loading. The results of EFA are displayed in table-4.

<Insert table-4 here>

Total variance explained

Table-5 highlighted the distribution of the total variance between the potential constructs of the study while the Eigenvalues have been used to measure the variance explained. It is suggested that the Eigenvalues for a factor must be greater than 1.0 is sufficient to explain the variance explain while less than 1.0 Eigenvalue is insufficient. In our case, it can be seen that a good percentage of variance explained is extracted from the analysis. Hence, the table-5 depicts the Eigenvalues and the distributed variance among each variable.

<Insert table-5 here>

Confirmatory factor analysis

After applying EFA, we have conducted a confirmatory factor analysis (CFA). This statistical analysis is considered as the most appropriate and direct method in structural equation modeling (SEM). Researchers applied the CFA test to estimate the hypothesized measurement model in the presence of latent and observed variables. In addition, researchers aim to predict the hypothesized model which is further confirmed by structural equation modeling (SEM). It is to be noted that, if the criteria set by SEM fits the proposed model, then we can say that the hypothesized model is confirmed among the several different models (Hair et.al. 2006). For this purpose, we used AMOS 21 and considered standard factor loadings to validate the dimensions of customer intention to use e-banking service. In our CFA model, a total of 33 items were loaded and confirmed the best fit among the observed and un-observed variables. This argument is also in line with Byrne (2013) study. The overall items for CFA model ranging 0.51 to 0.91 of factor loadings while it further established the construct and convergent validity of our study model by exceeding the minimum benchmark value of 0.50 (Hair et.al. 1998). Furthermore, we tested our measurement model under the guidelines provided by goodness-of-fit-test statistics. Findings from table-6 revealed that the estimated values for model fit indicators of our measurement model attaining the minimum cutoff level. These values include GFI = 0.93; AGFI = 0.91; NFI = 0.85; CFI = 0.99; TLI = 0.98 and the RMSEA = 0.012. Hence, we can say that our

measurement model for e-banking is appropriate and can be used for further analysis. The goodness of fit test outcome is displayed in table-6.

<Insert table-6 here>

Structural equation modeling (SEM)

SEM is considered as a combination of factor and multiple regression analysis that measure the relationship between the latent constructs and measured variables including several other latent constructs (Hair et.al. 2006). Additionally, SEM allows to obtain a separate relationship among the set of dependent variables. Concern with our study, we performed a path analysis under the framework of SEM to predict the behavioral intention of non-users toward e-banking service. This study follows the guidelines provided by Davis et.al. (1989) in building up the structural relationship. Davis et.al. (1989) proposed that PU and PEOU mediates the relationship between the external factors such as, trust, technological self-efficacy, enjoyment, internet experience, subjective norm and the intention to use e-banking service as displayed in fig-2

<Insert fig-2 here>

A structural model for e-banking service in Pakistan was used to predict the parameters. Our e-banking model was developed with 8 constructs namely, PU, PEOU, TR, TSE, IE, ENJ, SN and ITU. On the basis of our study hypotheses, table-6 further depicts that the overall structural model for e-banking service is acceptable using goodness-of-fit indicators. According to table-6 , the GFI = 0.94, AGFI = 0.92. NFI = 0.85, CFI = 0.98, TLI = 0.98 and the RMSEA = 0.013, which pointed out that all estimated values are within the threshold level. Additionally, hypothesized model is acceptable if the CFI value is close to 0.90 (Bentler, 1990; Hair et.al. 2006). Therefore, our findings conclude that the hypothesized model of this study is a useful and can be considered as appropriate instrument to predict the behavioral intention of non-users towards e-banking service.

The direct and indirect effect of the variables was also analyzed through path coefficients. Fig-2 also displays the causal direction of direct and indirect effect between the variables of the structural model. This means that an effect of one variable to the other variable through a mediating factor is known as an indirect effect while a direct effect represents the effect of one

variable to the other without having any indirect route. Ross (1975) and Alwin and Hauser (1975) investigations further highlighted the direct and indirect effect of exogenous variables on the endogenous variable. Moreover, we also used the recommendations provided by Cohen (1988) about the magnitude of the effect. Cohen (1988) stated that a small effect is observed if the path coefficient value is less than 0.10 (absolute value) while, a medium and large effect indicates with the value of 0.30 and 0.50 or greater respectively. Thus, table-7 is reported with the direct, indirect and the total effect of the variables on endogenous variables.

<Insert table-7 here>

In table-7, we observed three endogenous variables, namely, ITU, PU and PEOU. In first endogenous variable (ITU), subjective norm (SN) had a larger total effect (0.228) due to the direct effect (0.115) and an indirect effect (0.113). In addition, PEOU had smallest total effect on ITU, due to direct effects (-0.226) with an indirect effect (0.224). Overall, the model for ITU is explained 65 percent of variance due to the exogenous variables. The second endogenous variable (PU) is mainly affected by enjoyment (ENJ) due to the total effect (0.301). This total effect is a sum of direct effect (0.152) and an indirect effect (0.149). In the second model, SN had the smallest total effect (0.011) due to only direct effect. However, table- report 33 percent of variation in PU for e-banking model. The third and last endogenous variable is PEOU, signifies that, ENJ cause greater total effect (-0.118) whereas, this model has no indirect effect on PEOU. Here, the model was explained by 24 percent variation of PEOU in the e-banking model. The further description of causal effect is presented in table-7.

<Insert table-8 here>

However, the table-7 information only highlighted the magnitude of causal effect while this information is insufficient to explain whether a particular path direction has a significant/insignificant effect. For this purpose, we report table-8 to check the significance of path values, whether they are different from zero. We test path values using t-stats or critical ratio (coefficient divided by standard error). If the critical ratio value is greater than 1.96, the path coefficients significantly differ from zero while the level of significance is less than 5

percent. Therefore, table-8 depicts that, nine of thirteen path coefficients were found to be statistically significant. Overall, our findings conclude that PU and PEOU proved their importance in the TAM model to mediate the external factor relationship with the intention to use e-banking service in Pakistan. A summary of testing the hypotheses is also reported in table-9.

<Insert table-9 here >

5. Conclusion and Discussion

The main objective of this study is to investigate the intention to use e-banking service from non-users perspective. For this purpose, the study has employed TAM model which is further extended by introducing some new but relevant variables. These variables were extracted from the past empirical researches. Since the study is based on the TAM model which stated that the two beliefs PEOU and PU are the key constructs of one's behavioral intention to use (Davis, 1989). Therefore, we set our study hypotheses and found significant acceptability of the TAM model in the context of e-banking services. Moreover, results from fit indices and path analysis suggest that the TAM model is generally accepted to predict the intention of non-users towards e-banking service. Overall, the findings have supported nine hypotheses (H1, H3, H5, H6, H8, H9, H10, H11 and H12) out of thirteen.

Consistent with the earlier studies on TAM model, we found that the intention to use e-banking service is mainly associated with PU and PEOU. It is further concluded that the SN, PU and PEOU direct effect are significant and hence the intentions by non-users of e-banking can be more useful in determining their intention to use the service. Therefore, our analysis suggests that the non-users of e-banking is likely to adopt the service under the umbrella of positive influence received from their reference groups and the perception towards the effectiveness of e-banking. On the basis of the extended TAM model, the structural equation model for the intention to use has able to explained 65 percent of the variance in ITU e-banking by the non-users of the service. In addition, our final model highlighted that perceived usefulness and perceived ease of use were able to partly mediate the relationship between intention to use e-banking service and the external factors. This result is contrary to Davis et.al. (1989) study, argued that PU and PEOU fully mediate the relationship between intention to use and the

external factors. However, Abbad (2011) investigation further provides the support of our results.

The number of issues and challenges are faced by the banking industry in the presence of intense market competition and technological advancement. This exerts fierce pressure on financial institutions to grab customer intention towards the services they offer. In this sense, reduction in cost and price of the services may reduce due to the market competition. At the same time, the requirement of banking services becomes necessary, especially in the remote areas in developing countries like Pakistan. This allows banking industry to adopt some new technological advancement for their potential customers, specifically those are still out of using e-banking. More logically, the new generation of customers are considered as they are familiar with the web-based services. They are also an intense user of internet based services due to their preferences, high expectations and the convenience offered by the technology. Therefore, the potential users of web-based service may target by banks while offering new technological applications in order to fulfill their banking needs. It is a due fact that the banking counter services still have its own importance and branch banking route can not be eliminated. But, the e-banking services may reduce or balance the pressure for financial institutions in the competitive environment. So, a mixed channel of banking service should be offered by the banks to compete customers demand. E-banking may also reduce walk-in rush of customers, which help them to facilitate the customers more convenient by giving them proper attention. Thus, banks should educate the walk-in customers to use e-banking because these customers may not be the user of this service. They should also notify the benefits of e-banking to the potential users, specifically non-users, so that they become a part of this service, which ultimately saved the customer time and money.

More precisely, financial institutions are required to pay attention to the factors that attain customer intention to use e-banking service. For this reason, our study has provided a direction for the financial institutions to re-shape their strategies in order to offer the service. This further required to design a comprehensive and user-friendly application to deliver the e-banking service. It is mandatory because potential users may have technological self-efficacy greater level only if they found e-banking applications are quite simple to use. We also certain that this study has successfully applied the TAM model that explain non-users intention to use e-banking.

Hence, bank managers and policy makers can use the findings of this study to provide the service.

Concerned with the theoretical contributions, this study provided a support to the TAM model beliefs that the PU and PEOU are the key determinants of technology usage acceptance. The study has also contributed to highlight some important antecedents of PU and PEOU in the TAM model. Due to our study objectives, the present study has targeted the non-users of e-banking as they may be a potential users of this service. Therefore, the findings of this study can be useful to lay a foundation for other TAM related studies. Additionally, we offer some managerial implications through the findings of our study in which bank managers can increase the number of e-banking users which in turn reduce costs and price.

Although, this empirical research has many useful and encouraging findings, but it suffers some limitations like other studies do. First, the study assessed only non-users perspective due to study objectives. So, future studies may include a comparative analysis between user and non-user perspective of e-banking service. Second, the study has conducted in the biggest city of Pakistan (Karachi), meaning that, the findings need intensive attention when generalized to other geographical locations. Third, this study is concluded with e-banking service only, so future studies can specifically target to other domains of technology acceptance, namely e-learning, e-commerce, e-government and e-customer relationship management. Fourth, respondents of this study provide self-reported measures, which further need to explore more items to determine their intentions to use e-banking.

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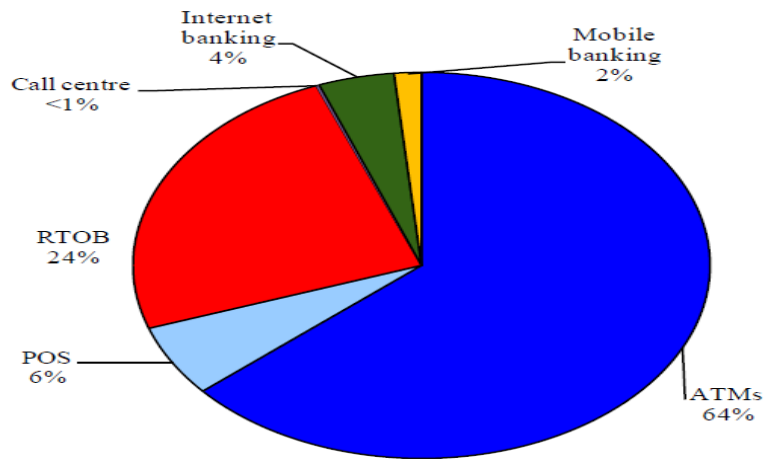
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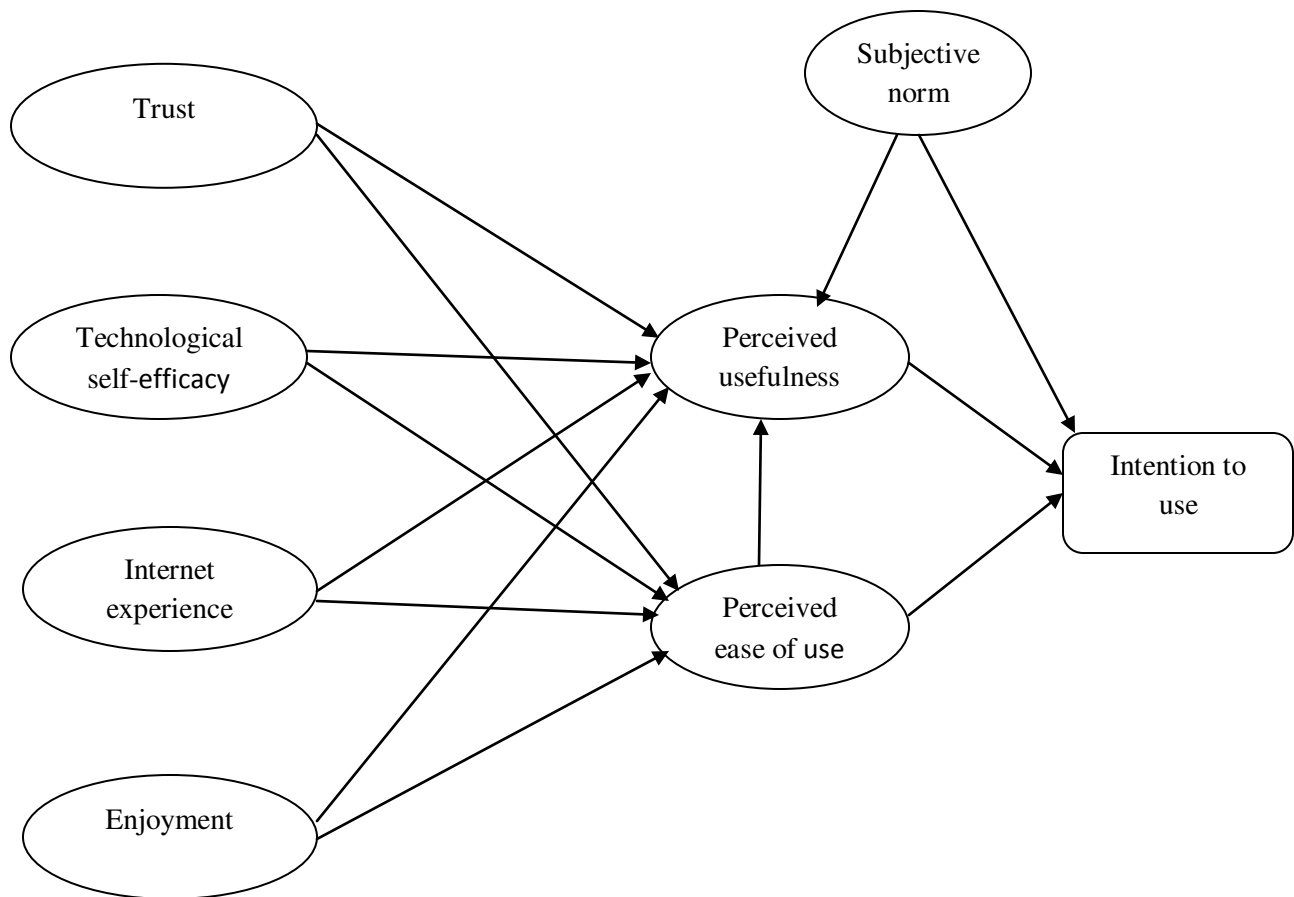
Appendix-1

Fig-1: E-Banking Composition in FY14 (volume)



Source: State bank of Pakistan annual report (2014)

Fig-2: Proposed model for e-banking acceptance



Source: Author's construction

Appendix-2

Table-1 Profile of respondents

Demographic items	Frequency	Percentile
Gender		
Male	281	68%
Female	131	32%
Marital status		
Single	235	57%
Married	177	43%
Age		
Less than 20	23	6%
20 - 30	121	29%
31 - 40	144	35%
41 - 50	105	25%
50 and above	19	5%
Education level		
Primay school	17	4%
Secondary school	88	21%
Graduate	168	41%
Postgraduate	72	17%
Diploma	67	16%
Occupation		
Business man	113	27%
Private employee	188	46%
Government employee	32	8%
Student	79	19%
Place of internet usage		
At work	138	33%
At home	169	41%
At internet café	22	5%
At school/university	83	20%
Experience of internet		
less than 1 year	25	6%
1 to 2 years	54	13%
3 to 4 years	147	36%
5 or above	186	45%

Source: Author estimation

Table-2- Results of reliability analysis

Variables	Items	Cronbach's alpha
PU	5	0.83
TR	7	0.76
ITU	4	0.75
TSE	4	0.76
PEOU	5	0.70
SN	3	0.65
IE	2	0.76
ENJ	3	0.61
Overall	33	0.63

Source: Authors estimation

Table- 3-Results of KMO and Bartlett's test

KMO measure of sampling adequacy	0.75
Bartlett's test of sphericity approx chi-square	3302.829
Degree of freedom	528
Probability	0.000

Source: Authors estimation

Table 4: Rotated component matrix

Items	Factor loadings							
	Perceived usefulness	Trust	Intention to use	Technological self-efficacy	Perceived ease of use	Subjective norm	Internet experience	Enjoyment
PU1	0.77							
PU2	0.69							
PU3	0.72							
PU4	0.83							
PU5	0.82							
TR1								
		0.61						
TR2								
		0.60						
TR3								
		0.66						
TR4								
		0.66						
TR5								
		0.69						
TR6								
		0.65						
TR7								
		0.64						
ITU1								
			0.82					
ITU2								
			0.83					
ITU3								
			0.77					
ITU4								
			0.61					
TSE1					0.76			
TSE2					0.74			
TSE3					0.72			
TSE4					0.80			
PEOU1						0.73		
PEOU2						0.63		
PEOU3						0.66		
PEOU4						0.62		

PEOU5	0.71			
SN1		0.72		
SN2		0.85		
SN3		0.70		
IE3			0.89	
IE4			0.87	
ENJ1				0.64
ENJ2				0.75
ENJ3				0.72

Source: Authors estimation

Table 5: Results of variance explained

Items	SN (%)	ENJ (%)	ITU (%)	TR (%)	IE (%)	TSE (%)	PU (%)	PEOU (%)
Variance explained by each factor in percentage	9.865	8.63	8.095	7.536	5.843	5.416	4.773	4.415
Cumulative variance explained in percentage	9.865	18.494	26.59	34.126	39.969	45.384	50.157	54.572
Eigen values	3.255	2.848	2.671	2.487	1.928	1.787	1.575	1.457

Note: Extraction method: principal components analysis.

Source: Authors' estimation

Table-6: Model fit table

Goodness-of-fit measures	GFI	AGFI	NFI	CFI	TLI	RMSEA(PCLOSE)
	≥	≥		≥		
Threshold values	0.85	0.80	Close to 1	0.90	Close to 1	≤ 0.05 (> 0.05)
Measurment model	0.93	0.918	0.85	0.99	0.98	0.012 (0.99)
Structural model	0.94	0.92	0.85	0.98	0.98	0.013 (0.98)

Notes: Measurment model- 33 items; Structural model- 33 items

Source: Authors estimation

Table 7: Standardised causal effect model

Dependent variable	R-value	Predictor	Direct effect	Indirect effect	Total effect	
Intention to use	0.65	SN	0.115	0.113	0.228	
		TR		0.025	0.025	
		TSE			-0.154	-0.154
		PU	-0.064			-0.064
		PEOU	-0.226	0.224		-0.002
		IE		0.064		0.064
		ENJ		0.155		0.155
Perceived usefulness	0.33	SN	0.011		0.011	
		TR	0.092	0.089	0.181	
		TSE	-0.076	-0.071	-0.147	
		PEOU	-0.043		-0.043	
		IE	-0.117	-0.101	-0.218	
		ENJ	0.152	0.149	0.301	
Perceived ease of use	0.24	TR	-0.003		-0.003	
		TSE	0.115		0.115	
		IE	0.014		0.014	
		ENJ	-0.118		-0.118	

Source: Authors estimation

Table-8: Standardized regression weights for the research model

Hypothesis	Regression Path	CR	Significance level	Remarks
H1	SN ---> ITU	2.011	**	Significant
H2	SN --> PU	0.030	0.969	Not significant
H3	TR --> PU	1.956	*	Significant
H4	TR --> PEOU	-0.016	0.991	Not significant
H5	TSE --> PU	2.063	**	Significant
H6	TSE --> PEOU	2.267	**	Significant
H7	IE --> PU	-0.875	0.856	Not significant
H8	IE --> PEOU	-2.380	**	Significant
H9	ENJ --> PU	2.110	**	Significant
H10	ENJ --> PEOU	-2.855	**	Significant
H11	PU --> ITU	4.018	***	Significant
H12	PEOU --> ITU	-2.122	**	Significant
H13	PEOU --> PU	0.364	0.676	Not significant

Notes: CR = Critical ratio

***P<0.001, **P<0.05, *P<0.10

Source: Authors estimation

Table- 9: Summary of hypotheses

Hypotheses	Remarks
H1: Subjective norm will have a significant effect on the intention to use e-banking.	Supported
H2: Subjective norm will have a significant effect on the perceived usefulness.	Not supported
H3: Trust will have a significant effect on the perceived usefulness.	Supported
H4: Trust will have a significant effect on the perceived ease of use.	Not supported
H5: Technological self-efficacy will have a significant effect on the perceived usefulness.	Supported
H6: Technological self-efficacy will have a significant effect on the perceived ease of use.	Supported
H7: Internet experience will have a significant effect on the perceived usefulness.	Not supported
H8: Internet experience will have a significant effect on the perceived ease of use.	Supported
H9: Enjoyment will have a significant effect on the perceived usefulness.	Supported
H10: Enjoyment will have a significant effect on the perceived ease of use.	Supported
H11: Perceived usefulness will have a significant effect on the intention to use e-banking.	Supported
H12: Perceived ease of use will have a significant effect on the intention to use e-banking.	Supported
H13: Perceived ease of use will have a significant effect on the perceived usefulness.	Not supported

Source: Authors estimation