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Preference on the Perception of Mobile Banking: A Saudi Arabian Perspective

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Abstract

The purpose of this study was to investigate specific factors that predict the acceptance of mobile banking in Saudi Arabia. A questionnaire was developed to focus on a number of constructs, identified in the literature, as potential predictors of acceptance. Quality of Internet connection was highlighted to have a significant impact on the perceived ease of using mobile banking. Also, the perceived usefulness of mobile banking was significantly affected by the degree of awareness among customers. Trust in mobile banking and resistance to change are among factors with a significant impact on consumer's attitude towards adopting mobile banking. This research extended the existing Technology Acceptance Model (TAM) (Davis, 1989) and made valuable contributions to mobile banking service providers in Saudi Arabia, as well as to researchers in mobile and Internet banking in the region. This research can be used as the basis of a more comprehensive study of consumer's attitude, towards the evolving mobile-based e-business solutions.

Keywords: Consumer Acceptance, Mobile Banking, Internet Connection

Introduction

Internet use in Saudi Arabia is one of the highest in the Middle East. About 49% of Saudi population use the Internet, and this number is rapidly increasing by the day (Internet World Stats, 2012). The fast growth of the Internet has radically changed the service channels used by banks and other financial institutions. Many banks have established websites that enable customers perform online transactions (Aladwani, 2001). The increasing use of smartphones in industrialized countries, and improvement in mobile Internet connectivity, have caused more customers to embrace smartphones, as the primary tool for connecting to the Internet. According to StatCounter Global Stats (2013), about 38% of Internet users in Saudi Arabia, surf the web using mobile phones compared to 1.5% recorded in early 2009 (Figure 1).

Needless to say, browsing traditional websites via small phone screens is not a convenient experience. Thus, many established companies, including several Saudi banks, have customized websites with large texts and fewer details for smartphones. In addition, many organizations have developed smartphone applications (apps) that work as an alternative to websites, in order to provide their customers with easy access. This leads us to the definition of mobile banking. Mobile banking is a technological system that enables bank customers to conduct financial transactions (e.g. paying bills, transferring money, etc.) through a mobile device, such as the mobile phone. Using a bank's phone apps and visiting the bank's website through phone are the two most popular forms of mobile banking in Saudi Arabia.

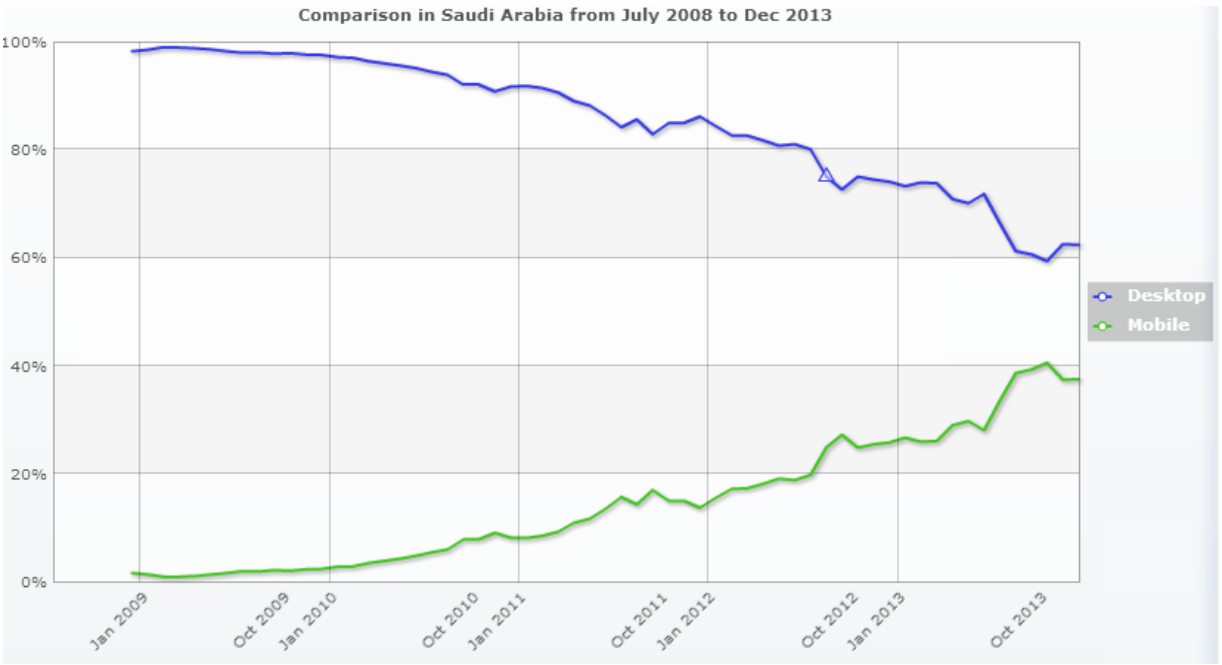

Figure 1. Mobile vs. Desktop access to the Internet in Saudi Arabia

Factors affecting consumer acceptance and adoption of mobile banking have been at the forefront of several researches in the world (e.g. Zhou, 2011; Riquelme et al., 2010; Akturan et al., 2012; Laukkanen et al., 2010; Tobbin, 2012). However, a limited number of researchers have investigated factors affecting the acceptance of mobile banking, from the perspectives of customers in Saudi Arabia. Notable studies were conducted by Almogbil (2005) and Al-Somali et al. (2009) who studied the adoption of Internet banking in Saudi Arabia. Findings from these studies could help in the development of strategic plans that will promote quality in mobile banking operations and services. The objective of this study addresses the following research questions:

(1) What are the factors that influence the customer's tendency to accept and use mobile banking as a primary banking channel?

(2)What are the relative importance of these factors? and

(3) What is the nature and strength of the relationship between these factors?

Literature Review

The theoretical framework of this paper is comprised of two sections. The first section addressed existing theories and models used to explain consumer's acceptance of technology while the second, discussed previous researches on the acceptance of online and mobile banking.

Information Technology Acceptance

Several researchers have made attempts to find factors that influence consumer's attitude towards information technology to enhance its usage. Several models have been proposed, but the model we recommend entails the application of technology acceptance (TAM). This model investigates factors that have significantly influenced the acceptance of mobile banking. TAM is one of the most widely used models for studying the acceptance of information technology systems.

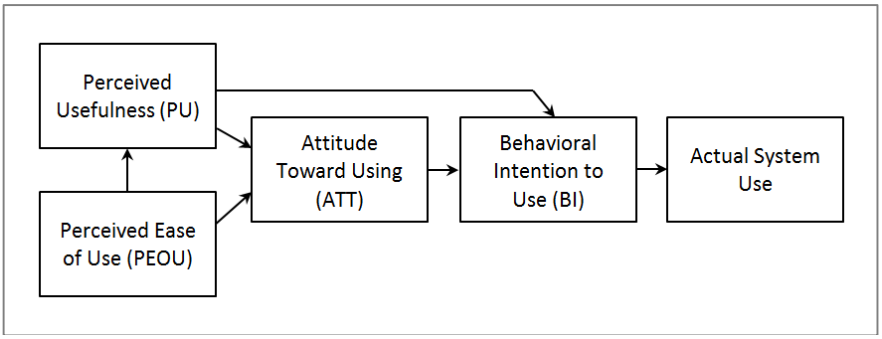

Figure 2. TAM model (Davis et al., 1989)

TAM explains that perceived usefulness (PU) and perceived ease of use (PEOU) are the main determinants of a consumer's attitude (ATT) towards using a new technology. PU entails the degree to which a person believes that using a system would enhance his or her job performance while PEOU is the degree to which an individual believes that using the new system would be stress-free (Davis et al., 1989). Together, these two factors create a favorable behavioral intention (BI) toward using the new technology. TAM also suggests that BI is jointly determined by ATT and PU. In recent years, more complete models for understanding the acceptance and adoption of IT have been proposed; one of which is the unified theory of acceptance and use of technology (UTAUT) (Venkatesh et al., 2003). UTAUT integrates eight previously established models on an individual's acceptance of IT and states that four elements (effort expectance, performance expectance, social influence and facilitating conditions) play significant roles as direct factors of user acceptance and usage behavior.

TAM has been very instrumental in several empirical studies and its importance in predicting intention and attitude towards new technologies is better than other models, such as the theory of reasoned action (TRA) and the theory of planned behavior (TPB) (Mathieson, 1991). The outcome confirms the validity of TAM, as applied in various fields using 88 published studies (Wang et al., 2003). This shows TAM to be a powerful, reliable, valid and robust predictive model that can be used in a variety of contexts. In addition, Hernández et al.'s (2008) study showed that TAM correctly explains the acceptance level of technology in business context, as long as the focus and subject proposed are correct. Several researchers introduced additional factors to TAM, suggesting that these external factors will improve the model's predictive power (AlSukkar, 2005; Davis, 1993). However, some researchers claimed that despite these extensions, most studies obtained (R^2) values between 1 and 45%, while only a few exceeded this range (Hernández et al., 2008).

Factors influencing mobile banking acceptance

Many factors are thought to influence the acceptance of mobile banking in Saudi Arabia and they are included in the model discussed below.

Quality of Internet connection

The Internet was introduced into Saudi Arabia in the late 1990s; and since then, it has gained much popularity. The quality of Internet connection is thought to influence the acceptance of mobile banking. Sathye (1999) studied Internet access as a factor that affects the adoption of online banking, while Almogbil (2005) showed that there is a significant relationship between the speed of Internet access and the use of online banking services.

Awareness of service and its benefit

As a result of low awareness in Saudi Arabia, many people are unfamiliar with mobile banking and are thus unwilling to accept it. A similar observation was made by Sathye (1999), who

stated that customers were not aware of the benefits associated with online banking. In addition, Howcroft et al. (2002) confirmed that ignorance of online banking services and benefits were reasons why consumers were reluctant to their use. This led us to investigate whether awareness influences the acceptance of mobile banking.

Mobile self-efficacy

Most related research works were found to have focused on computer self-efficacy. Computer self-efficacy is the consumer's self-confidence in his or her ability to perform tasks across multiple mobile application domains (Monsuwe et al., 2004). A number of research examined the relationship between self-efficacy and computer use (e.g. Wang et al., 2003; Eastin, 2002; Monsuwe et al., 2003; Eastin, 2002; Wang et al., 2003). Davis et al. (1989) and Wang et al. (2003) found that computer self-efficacy is related to perceived ease of use and perceived usefulness. Polaoglu and Ekin (2001) found that customers who are familiar with the Internet and email do not find Internet banking difficult. Based on this theoretical support, we safely concluded that the stronger a person's self-efficacy beliefs are, the more likely he/she will engage in internet banking. We related this conclusion to mobile banking and attempted to investigate the influence of self-efficacy.

Trust

Several researches have investigated trust as a factor affecting mobile banking (Yousafzai et al., 2003). In addition, Suh and Han (2002) stated that most researchers investigated trust as a factor affecting online banking, a similar phenomena. We are aware that consumer's trust in online banking, was key to the development of e-commerce. We therefore believe that trust is more important in online banking as opposed to offline banking.

Resistance to change

Resistance to changing from the old ways of conducting banking transactions to online banking has received considerable attention in the literature (e.g. Sathye, 1999; Wallis Report, 1997). Generally, consumers are not eager to adopt online banking, unless absolutely necessary. Daniel (1999) found that customers are resistant, when it comes down to adopting online banking. This research further investigated if a similar relationship exists between resistance to change and the adoption of mobile banking.

Research Model

Based on the theoretical background, this study investigated factors that determine consumer acceptance of mobile banking in Saudi Arabia, using extended TAM and taking into consideration, the effects of the additional factors stated above. The PEOU and PU influence customer's attitude towards using mobile banking. In turn, attitude influences the adoption of mobile banking services which ultimately determines the actual use of mobile banking. Actual use is predicted by consumers' behavioral intention (BI). The extended TAM used in this study is illustrated in Figure 3.

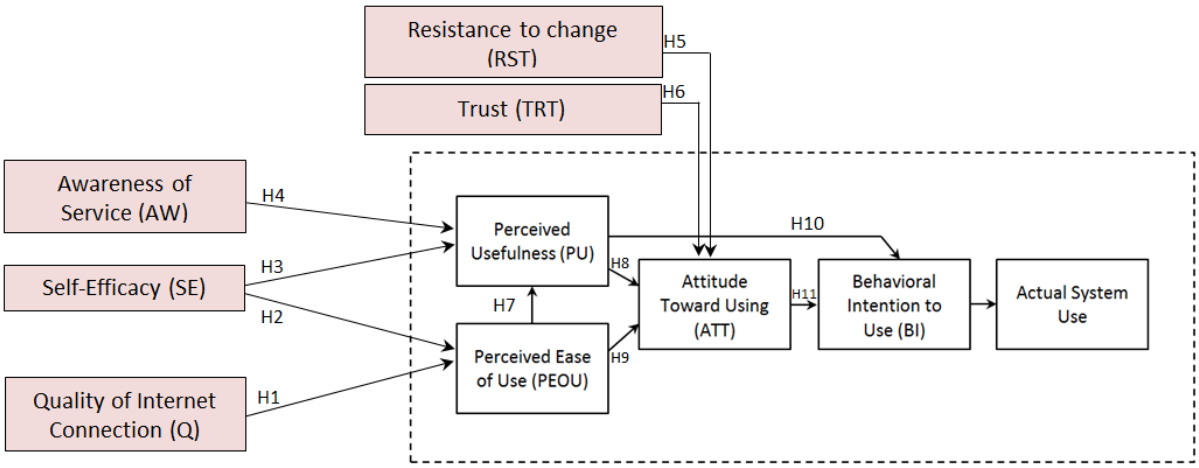

Figure 3. Proposed research model—the extended TAM

Research Hypotheses

As illustrated in the extended TAM model in Figure 2, several hypotheses were constructed for testing. They are summarized in Table 1 and their sources are given under the related literature section.

Table 1: Research hypotheses.

Hypotheses	**Related Literature**
H1: Quality of Internet connection has a positive impact on customer's perceived ease of use	Pikkarainen et al. (2004) AlSukkar and Hassan (2005)
H2: Mobile self-efficacy has a positive impact on customer's perceived ease of use	Eastin (2002), Wang et al. (2003), Pituch and Lee (2006)
H3: Mobile self-efficacy has a positive impact on customer's perceived usefulness	Wang et al. (2003)
H4: Awareness of services and its benefits has a positive impact on customer's perceived usefulness	Sathye (1999), Yousafzai et al. (2003), Pikkarainen et al. (2004)
H5: Resistance to change has significant impact on customer's attitude towards using mobile banking	Sathye (1999), Alagheband (2006), Agarwal and Karahanna (2000)
H6: Customer's trust in mobile banking site/app has a positive impact on his/her attitude towards using mobile banking	AlSukkar (2005) AlSukkar and Hassan (2005)
H7: Customer's perceived ease of use has a positive impact on his/her perceived usefulness of mobile banking	Davis (1986), Davis et al. (1989)
H8: Customer's perceived usefulness has a positive impact on his/her attitude towards using mobile banking	Agarwal and Karahanna (2000)
H9: Customer's perceived ease of use has a positive impact on his/her attitude towards using mobile banking	Lederer et al. (2000) Venkatesh and Davis (2000)
H10: Customer's perceived usefulness has a positive impact on his/her intention to use mobile banking	Moon and Kim (2001)
H11: Customer's attitude towards using mobile banking has a positive impact on his/her intention to use it	Lai and Li (2005)

Methodology

Survey Administration

A survey questionnaire was developed to collect data for hypotheses testing.

Table 2: Profile of survey sample.

Respondents characteristics	**Number of respondents who answered (n = 167)**	**Percentage (%)**
Age group		
Younger than 18	0	0.0
18–25	20	12.3
26–35	84	51.9
36–45	36	22.2
46–55	18	11.1
56 or older	4	2.5
Gender		
Male	102	64.6
Female	56	35.4
Highest academic qualification		
High school	2	1.2
Two-year diploma	6	3.7
Bachelor's degree	89	54.9
Master's degree	60	37.0
Doctoral degree	4	2.5
Other	1	0.6
Nationality		
Saudi	134	82.7
Non-Saudi	25	17.3
Region of residence in Saudi Arabia		
Eastern province	157	96.9
Central region	1	0.6
Western region	2	1.2
Southern region	2	1.2
Northern region	0	0.0
Monthly income (in SAR)		
Less than SR5,000	5	3.2
SR5,001–SR10,000	13	8.4
SR10,001–SR15,000	49	31.8
SR15,001–SR20,000	38	24.7
SR20,001 or more	49	31.8
Level of Internet literacy		
Advanced	102	64.2
Intermediate	57	35.8
Beginner	0	0.0
Level of mobile literacy		
Advanced	96	59.3
Intermediate	62	38.3
Beginner	4	2.5

A sample of 200 strategic business account of organizations in different industries were randomly chosen from the Ministry of Commerce and Industry provided business listing. From the 175 responses collected, 167 were found valid, yielding a response rate of 83.5% (167/200).

About half the questionnaire's responses were collected using hard copies, while the other half was collected online. Demographic questions of the respondent were added at the end of the survey questionnaire, summarized in Table 2. The largest proportion of respondents (52%) were in the 26 to 35 years age category and 65% of the total number of respondents are male. About 55% of the respondents had a bachelor's degree, while 40% of them had an advanced degree. Majority of the respondents, 83%, were Saudis and 97% of them had lived in the Eastern Province. About one third of the respondents had a salary of SR20,001 or above, and another third had salary of SR10,001 to SR15,000. Finally, 64% of the respondents indicated that their Internet literacy is advanced, and 59% had an advanced mobile literacy. Table 2 provides the profile of the survey sample.

Measurement Development

Measurement items used in this research were adapted from the measures previously validated or were developed on the basis of a literature review (Table 1). In addition, a 5-point Likert scale ranging from (1) 'strongly disagree' to (5) 'strongly agree' was used to assess the responses. The final questionnaire items used to measure each construct are presented in Table 3.

Table 3: Summary of measurement scales.

Constructs	**Measure**	
Perceived Usefulness	PU1	Mobile banking enables me to accomplish banking activities more quickly
	PU2	Mobile banking enables me to improve on my performance of utilizing banking services
	PU3	Mobile banking enables me to accomplish more banking activities
	PU4	Mobile banking gives me greater control over financial banking activities
Perceived Ease of Use	PEOU1	Interaction with mobile banking app/website is clear and understandable
	PEOU2	It is easy to do what I want to do using mobile banking
	PEOU3	Learning to use mobile banking will be or has been easy
	PEOU4	I expect to become or I am already skilled at using mobile banking
	PEOU5	Overall, I expect online banking to be easy for me to use
Intention to Use Mobile Banking	BI1	I will use mobile banking on a regular basis in the future
	BI2	I expect my use of mobile banking for handling my financial transactions to continue in the future
	BI3	I will strongly recommend others to use mobile banking
Attitude Toward Using Mobile Banking	ATT1	Mobile banking development will support customers
	ATT2	I will encourage the use of mobile banking among my colleagues
	ATT3	I am not satisfied with using traditional banking services when carrying out financial activities
	ATT4	Overall, my attitude towards mobile banking usage is positive
Quality of Internet Connection	Q1	My access to the Internet using my mobile device is easy
	Q2	The Internet enables me to handle financial transactions from my

		mobile device accurately
	Q3	Using the Internet for handling financial transactions from mobile device is efficient
	Q4	The Internet enables customers to access the bank's website from their mobile devices 24/7
	Q5	The Internet guarantees that all transactions to the bank have been completed
Awareness of Mobile Banking Services	AW1	I receive enough information about what mobile banking services are out there
	AW2	I receive enough information about the benefits of mobile banking
	AW3	I receive enough information of how to use mobile banking
	AW4	I never received information about mobile banking from the bank
Trust in Mobile Banking Services	TRT1	The mobile banking site/app is trustworthy
	TRT2	I trust in the benefits of the decisions of the mobile banking site/app
	TRT3	The mobile banking site/app keeps its promises and commitments
	TRT4	The mobile banking site/app keeps customers' best interest in mind
	TRT5	I trust my bank's mobile banking site/app
Resistance to Change	RST1	I am interested to hear about new technological developments
	RST2	Technological developments have enhanced our lives
	RST3	I feel comfortable in changing and using mobile banking services for my financial activities
Mobile Self-efficacy	SE1	I could conduct mobile banking transactions only if I had the system manuals for reference
	SE2	I could conduct mobile banking transactions if I had seen someone else using it before trying it myself
	SE3	I could conduct mobile banking transactions if I could call someone for help if I got stuck

Data Analysis

Construct Validation

As shown in Table 4, the reliability measures were way above the recommended level of 0.70, as an indicator of adequate internal consistency [Hair et al., 1995; Nunnally, 1978].

Table 4: Reliability statistics.

Construct	**Conbach's alpha**
Perceived Usefulness	0.882
Perceived Ease of Use	0.870
Intention to Use	0.929
Attitude towards Using	0.757
Quality of Internet Connection	0.875
Awareness	0.816
Trust	0.902
Resistance to Change	0.770
Mobile Self-efficacy	0.817

Examination of Research Hypotheses

In this section, the structural model was assessed by examining the path coefficients beta weight (β) and the R^2 value using regression analysis. (β) illustrates how strong the relationship is between dependent and independent variables, while R^2 shows the amount of variance explained by the independent variables. Both indicate how well the model is performing and R^2 shows the predictive power of the model. β should be significant and consistent with expectations. The software package that was used to conduct assessment of the research model is the Statistical Package for the Social Sciences (SPSS) Version 16. The results of the statistical analysis of the research model are shown in Figure 4 and Table 5.

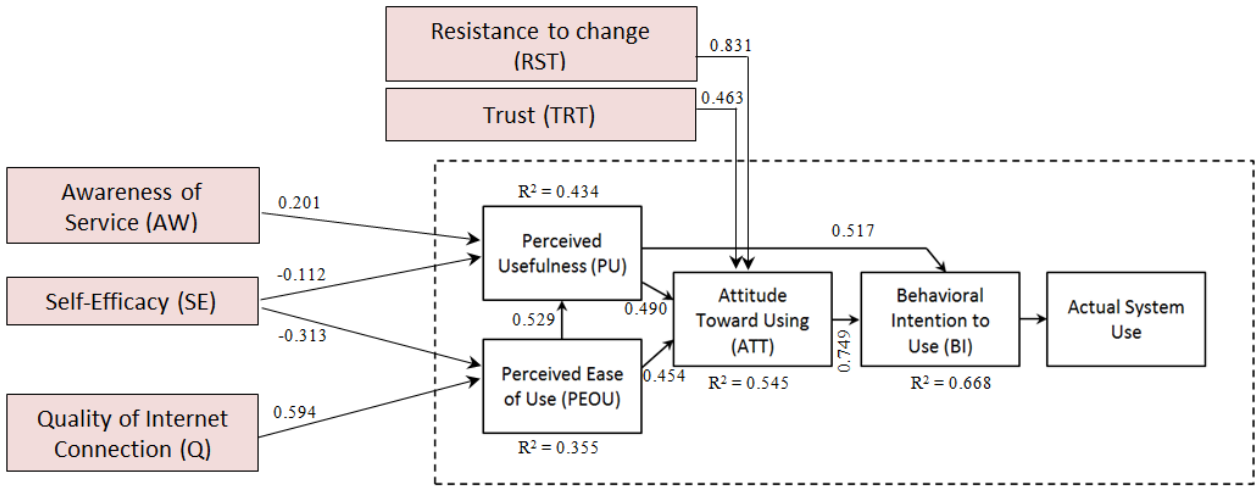

Figure 4: Results of structural model

Table 5: Assessment of the structural model

No.	Hypothesis path	R^2	Path coefficient (β)	t-Value	p-Value	Supported?
H1	Q →PEOU	0.355	0.594	9.393	0.000	Yes
H2	SE →PEOU	0.063	-0.313	-3.284	0.001	No
H3	SE → PU	0.009	-0.112	-1.207	0.229	No
H4	AW → PU	0.040	0.201	2.563	0.011	Yes
H5	RST → ATT	0.353	0.831	9.393	0.000	Yes
H6	TRT → ATT	0.347	0.463	9.225	0.000	Yes
H7	PEOU→ PU	0.309	0.529	8.435	0.000	Yes
H8	PU → ATT	0.358	0.490	9.411	0.000	Yes
H9	PEOU→ ATT	0.336	0.454	9.032	0.000	Yes
H10	PU →BI	0.434	0.517	11.121	0.000	Yes
H11	ATT →BI	0.615	0.749	16.131	0.000	Yes

The results indicate that there are 9 variables with significant statistical support. Quality of Internet connection correlated with perceived ease of use. Resistance to change and trust correlated with consumer's attitude towards using mobile banking. Moreover, PU and PEOU (from the basic TAM model) correlated with consumer's attitude towards using mobile banking. Also, PU and consumer's attitude correlated with the intention to use mobile banking. Self-efficacy neither correlated with PU nor PEOU, and awareness did not correlate with PU either.

It was found that quality of Internet connection explains 36% of the variance of PEOU with a path of positive effect and coefficient of 0.594; thus, hypothesis H1 was supported. PEOU and awareness explain 43% of the variance in PU. Both paths had positive effects, with positive coefficients of 0.529 and 0.201, respectively; meaning that hypotheses H4 and H7 were supported.

Resistance to change, trust, PU and PEOU explained 55% of the variance in consumers' attitude towards mobile banking. Each had a positive effect with coefficients of 0.831, 0.463, 0.490, and 0.454, respectively, meaning that hypotheses H5, H6, H8 and H9 were supported. Moreover, PU and consumer's attitude explained 67% of the variance of intention to use mobile banking with positive coefficients of 0.517 and 0.749, respectively; meaning hypotheses H10 and H11 were supported. Surprisingly, mobile self-efficacy had no effect on both PU and PEOU, meaning that hypotheses H2 and H3 were not supported.

Discussion

The growth of mobile-based Internet usage in Saudi Arabia has encouraged companies to advertise and sell their products and services online through mobile apps and websites. Several banks have implemented mobile banking to increase efficiency, reduce cost and improve service quality. It is therefore, important for these banks and financial institutions to identify factors that influence customer's attitude towards adopting and using these services.

This study identified several factors that have an impact on consumer's attitude towards mobile banking such as quality of Internet connection, awareness of service, trust and resistance to change. It is important to emphasize the high explanatory power (R^2) achieved in this study in which attitude towards use (ATT) and perceived usefulness (PU) explain 67% of the variance in behavioral intention. The current study demonstrated that the extended TAM model currently explains, to a good extent, the acceptance of mobile banking in Saudi Arabia.

Interestingly, almost two thirds of the respondents had advanced mobile and Internet literacy and only 2.5% were beginners. The implication of this finding is that majority of the respondents are familiar with mobile Internet surfing, this implies potential willingness to engage in mobile banking. Since there is not much that banks can do to improve the quality of Internet connection, they could pay more attention to customers' awareness of mobile banking service. In addition, while marketing the services, banks should emphasize their security features. This will increase consumers' trust and increase chances of usage. In addition, banks should exercise marketing techniques to motivate their customers to switch (change) to using mobile banking. Increase in customers' willingness to change, will improve the chances of adopting mobile banking.

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Conclusion

The purpose of this study was to identify factors that encourage customers to adopt mobile banking in Saudi Arabia, useful for both e-commerce and e-banking. The present study supports previous TAM results found in earlier research studies. It shows the applicability of a uniquely extended TAM in predicting the factors that influence Saudi customers to accept online banking. This study resonates with King and He (2006) who stated that TAM is a powerful, highly reliable, valid and robust predictive model that may be used in a variety of contexts.

This study derived its factors from previous conceptual and empirical research works. These research factors, used in many technology and online banking adoption studies, were found to be

reliable and valid. Future researches could include other variables such as social influence, perceived value, cost, and customer loyalty to mobile banking. It will also be interesting to investigate factors that affect business customers rather than consumers. In addition, future studies could use a more diversified and larger sample. This research was conducted in the Eastern region of Saudi Arabia. Information about online banking adoption and acceptance in other parts of the country, especially rural areas may differ from our conclusion. This study could also be extended to GCC countries operating in similar conditions to compare results.

References

Agarwal, R. & E. Karahanna, (2000). Time flies when you're having fun: cognitive absorption and beliefs about information technology usage. *MIS Quarterly,* 24(4), 665–694.

Al-Somali, S., Gholami, R. & D. Clegg (2009). An investigation into the acceptance of online banking in Saudi Arabia. *Technovation,* 29, 130-141.

Akturan, U. & N. Tezcan (2012). Mobile banking adoption of the youth market: Perceptions and intentions. *Marketing Intelligence & Planning,* 30(4), 444-459.

Aladwani, A.M. (2001). Online banking: a field study of drivers, development challenges, and expectations. *International Journal of Information Management,* 21(3), 213–225.

Almogbil, A. (2005). *Security, Perceptions, and Practices: challenges facing Adoption of Online Banking in Saudi*. George Washington University, Washington,.

AlSukkar, A. (2005). The Application of Information System in the Jordanian Banking Sector: a study of the Acceptance of the Internet. Ph.D. Thesis. University of Wollongong, New South Wales, Australia.

AlSukkar, A. & H. Hassan (2005). Towards a model for the acceptance of internet banking in developing countries. *Information Technology for Development,* 11(4), 381–398.

Daniel, E. (1999). Provision of electronic banking in the UK and the Republic of Ireland. *International Journal of Bank Marketing,* 17(2), 72–82.

Davis, F.D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340.

Davis, F.D. (1993). User acceptance of information technology: system characteristics, user perceptions and behavioral impacts. *International Journal of Man–Machine Studies*, 38, 475–487.

Davis, F.D., Bagozzi, R.P., & P.R. Warshaw (1989). User acceptance of computer technology: a comparison of two theoretical models. *Management Science,* 35(8), 982–1003.

Eastin, M. (2002). Diffusion of e-commerce: an analysis of the adoption of four e-commerce activities. *Telematics and Informatics,*19(3), 251–267.

Hair, J.F., Anderson, R.E., Tatham, R.L. & W.C. Black (1995). *Multivariate Data Analysis with Readings*. Prentice-Hall International, Englewood Cliffs,

Herna´ndez, B., Jimene´z, J. & M.J. Marti (2008). Extending the technology acceptance model to include the IT decision-maker: a study of business management software. *Technovation,* 28(3), 112–121.

Howcroft, B., Hamilton, R., & P. Hewer (2000). Consumer attitude and the usage and adoption of home-based banking in the United Kingdom. *The International Journal of Bank Marketing*. 20(3), 111–121.

King, W.R., & J. He, (2006). A meta-analysis of the technology acceptance model. *Information & Management*, 43(6), 740–755.

Lai, V.S., & H. Li, (2005). Technology acceptance model for internet banking: an invariance analysis. *Information & Management*, 42(2), 373–386.

Laukkanen, T., & V. Kiviniem (2010). The role of information in mobile banking resistance. *International Journal of Bank Marketing*, 28(5): 372-388.

Lederer, A.L., Maupin, D.J., Sena, M.P. & Y. Zhuang (2000). The technology acceptance model and the World Wide Web. *Decision Support Systems*, 29(3), 269–282.

Mathieson, K. (1991). Predicting user intentions: comparing the technology acceptance model with the theory of planned behavior. *Information Systems Research*, 2(3), 173–191.

Monsuwe´, T.P., Perea, T., Dellaert, B.G. & K. D. Ruyter (2004). What drives consumers to shop online? A literature review. *International Journal of Service Industry Management,* 15(1), 102–121.

Moon, J. & Y. Kim (2001). Extending the TAM for a World-Wide-Web context. *Information and Management*, 38(4): 217–230.

Nunnally, J.C. (1978). Psychometric Theory, 2nd edn, McGraw-Hill, New York.

Pikkarainen, T., Pijjarainen, K., Karjaluoto, H., and S. Pahnila (2004). Consumer acceptance of online banking: an extension of the technology acceptance model. *Internet Research*, 14(3), 24–235.

Pituch, K. & Y. Le (2006). The influence of system characteristics on e-learning use. *Computer & Education*, 47(3), 222–244.

Polatoglu, V.N. & S. Ekin (2001). An empirical investigation of the Turkish consumers' acceptance of Internet banking services. *International Journal of Bank Marketing,* 19(4), 156–165.

Riquelme, H, & R. Rios (2010). The moderating effect of gender in the adoption of mobile banking. *International Journal of Bank Marketing,* 28(5), 328-341.

Sathye, M. (1999). Adoption of internet banking by Australian consumer: an empirical investigation. *International Journal of Bank Marketing,* 17(7), 324–334.

Suh, B. & I. Han (2002). Effect of trust on customer acceptance of Internet banking. *Internet Research*, 1(1), 247–263.

Tobbin, P. (2012). Towards a model of adoption in mobile banking by the unbanked: a qualitative study. *Info,* 14(5), 74-88.

Venkatesh, V. & F.D. Davis (2000). A theoretical extension of the technology acceptance model: four longitudinal field studies. *Management Science,* 46(2), 186–204.

Venkatesh, V., Morris, M.G., Davis, G.B. & F.D. Davis (2003). User acceptance of information technology: towards a unified view *MIS Quarterly*, 27(3), 425–478.

Wang, A.Y., & M. Newlin (2002). Predictors of web-student performance: the role of self-efficacy and reasons for taking an on-line class. *Computers in Human Behaviour*, 18(2), 151–163.

Wang, Y.S., Wang, Y. M., Lin, H. H. and I. Tang (2003). Determinants of user acceptance of internet banking: an empirical study. *International Journal of Service Industry Management*, 14(5), 501–519.

Wallis, R. (1997). The Financial System Inquiry Final Report (Chairman: Mr. Stan Wallis). *AGPS,* Canberra.

Yousafzai, S.Y., Pallister, J.G. & G.R. Foxal (2003). A proposed model of e-trust for electronic banking. *Technovation*, 23(11), 847–860.

Zhou, T. (2011). An empirical examination of initial trust in mobile banking. *Emerald.* 21(5), 527-540.