



**AN EMPIRICAL EXAMINATION OF CUSTOMERS' MOBILE PHONE  
EXPERIENCE AND AWARENESS OF MOBILE BANKING SERVICES  
IN MOBILE BANKING IN SAUDI ARABIA**

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**ABSTRACT**

Aim/Purpose	This work aims to understand why a disparity between the popularity of smart phones and the limited adoption of m-banking exists. Accordingly, this study investigates factors that affect a person's decision to adopt m-banking services. Such an investigation seeks to determine if and to what extent customers' mobile phone experience as well as their awareness of m-banking services influence their intention to use such services?
Background	This study developed a conceptual model to determine the influence that users' mobile phone experience as well as users' awareness of m-banking services had on users' behavioral intention to use m-banking in Saudi Arabia.
Methodology	The quantitative method used to collect data was a survey questionnaire technique. A questionnaire with non-structured (close-ended) questions was formulated. A random sample, targeting banking customers in Saudi Arabia, was selected. This study collected data using a cross-sectional survey. Of those surveyed, 389 provided valid responses eligible for data analysis. SPSS v.22 was used to analyze the data.
Contribution	This study produced helpful results and a new m-banking conceptual model. The developed conceptual model focused integrally on users' awareness and experience as antecedents of m-banking adoption and highlighted the importance of differentiating between measuring the users' characteristics in adopting e-banking in general and m-banking services in particular. In addition, this type of model has the ability to synthesize new control variables as well as to study technology acceptance in developing countries. This study, based on an extended UTAUT model, set out to discover what factors might affect customers' intentions to use m-banking in Saudi Arabia.
Findings	The results show that service awareness has a direct effect on performance and effort expectancy, but not on perceived risk. Moreover, mobile phone experience fails to impact the relationships in the same hypothesized direction. As

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	anticipated, performance expectancy, effort expectancy, and perceived risk have direct and significant effects on behavioral intentions to use m-banking. However, customer awareness fails to impact the relationships of performance expectancy, effort expectancy, and perceived risk on behavioral intentions to use m-banking.
Recommendations for Practitioners	Banks should target customers by distributing useful information and applying measures to increase acceptance. Banks need to introduce something imaginative to convince bank customers to abandon existing service channels and adopt m-banking services. Banks should make m-banking services the easiest service for conducting bank transactions and/or help customers conduct transactions that they cannot do any other way.
Recommendation for Researchers	Other factors, such as trust, culture, and/or credibility should be investigated along with user's awareness and experience factors in m-banking services. There is a need to focus on a specific type of m-banking. Thus, it may be fruitful to study the adoption of different systems of m-banking services.
Impact on Society	This study suggests that m-banking services should be designed and built based on a deep understanding of customers' needs using extensive testing to assure that applications and sites function well in a mobile setting.
Future Research	Future researchers should apply the conceptual model developed in this study in different settings, different countries, and to different technologies.
Keywords	mobile banking, mobile commerce, mobile phone experience, awareness of services, behavioral intention to use

## INTRODUCTION

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Recently, following the implementation of mobile technologies in diverse business sectors, the use of mobile technologies has become a driving force in Information and Communication Technology (ICT) (Al-Hunaiyyan, Bimba, Idris, & Al-Sharhan, 2017). Mobiles allow users to use applications similar to those that are accessible via personal computers. In addition, mobile phones are becoming smaller and smarter (Isac, 2013). Mobile devices, with their applications and tools, are envisioned as plausible producers of numerous opportunities within the banking sector (Koksal, 2016). Mobile banking (m-banking) services benefit customers by reducing costs and increasing the flexibility, efficiency, and speed of services (Kazi & Mannan, 2013). Although developing countries offer vast prospective markets for m-commerce service providers, and consumers subscribe to mobiles in increasing numbers, use of m-commerce—m-banking in particular—has not gained traction (Kalinic & Marinkovic, 2016). This pattern is applicable even in other countries (Al Khasawneh, 2015). Therefore, researchers must pay more attention to m-commerce over e-commerce, especially in developing countries (Alsheikh & Bojei, 2014).

In Saudi Arabia, the number of mobile internet users is vastly increasing (Baabdullah & Williams, 2013); as evidence, between 2007 and 2012, the number of wireless connections in Saudi Arabia rose from 28.4 million to 53.0 million (Saudi Arabia Communications and Information Technology Commission, 2014). To support the need for various types of internet-enabled services, the country is investing in telecommunications infrastructure. With the widespread diffusion of internet accessible devices, the mobility infrastructure and networks in Saudi Arabia are in an advanced stage of development. Al-Suwaiyel (2007) stated that 3G mobile devices are adequate for running banking transactions, and such devices have been available in Saudi Arabia since 2006. However, their availability does not guarantee that a high rate of mobile users' will adopt mobiles for internet services. There have been requests to investigate how to increase the use of banking services via mobile devices (Alsheikh & Bojei, 2014).

Banking customers do not all have the same understanding and abilities when it comes to e-banking and/or m-banking. Therefore, banking customers will also have differing levels of intention to use such technologies. It is essential to identify the main elements that affect users' intention to use m-banking in order to instruct the banking sector on the appropriate marketing strategies to adopt to increase the rate of m-banking use (Koksal, 2016). Users' personal characteristics are crucial in determining their tendency to adopt m-banking and other similar modern technology and, therefore, should be further examined for marketing purposes (Spencer, Buhalis, & Moital, 2011). Investigations like these are vital for understanding, in a comprehensive manner, the customer-based electronic revolution. Through these investigations, banks can use the mobile user characteristics to develop effective marketing strategies before offering such m-banking services in the market (Al Khasawneh, 2015).

Limited studies have analyzed the use of m-banking in developing countries, particularly in the Middle East (Alafeef, Singh, & Ahmad, 2011; Alsheikh & Bojei, 2014). For example, Accenture (2013) stated that the use of m-banking is not common in developing countries (Juniper Research, 2013). In fact, Saudi Arabia is one of the countries that lags behind significantly in the use of the latest mobile services (Koenig-Lewis, Palmer & Moll, 2010). Although mobile services offer conveniences to users, various issues that hamper adoption of modern technology tend to be present in Saudi Arabia. These issues include lack of technology awareness, poor experiences with technology, perceptions of risk in using technology, and unfamiliarity with using technology (Alsheikh & Bojei, 2014). According to Al-Ghaith, Sanzogni, and Sandhu (2010), users' awareness of m-banking services has a significant positive effect on their decision to use such services in Saudi Arabia. However, questions remain regarding how users' awareness of m-banking services as well as the extent to which such awareness can influence their intention to use such services?

Therefore, there is urgent need to conduct the current study, since customers' awareness of m-banking services and mobile phone experience have been identified as crucial factors, but they have not been sufficiently measured; also, no study has examined the impact of these factors in m-banking with a focus on Saudi Arabia in particular. Without such studies to improve the rates of adoption of these services, banks' customers would not get the m-banking services benefits, which include decreased cost, increased flexibility and efficiency, and speedy services (Kazi & Mannan, 2013). In addition, banks benefit from customers' engagement with m-banking services; that is, when banks have more customers engaged in m-banking, the bank becomes more permanent and stable. Further, the findings of this study can help the decision makers in Saudi Arabian banks to formulate strategic plans for sustaining their competitive advantage through delivering their services by mobiles (Isac, 2013). Yet, in general, m-banking services are still in the initial stage of usage in Saudi banks (Alsheikh & Bojei, 2014). To fill this gap, this study developed a conceptual model to reveal factors that could contribute to the adoption of m-banking services in Saudi Arabia.

## LITERATURE REVIEW

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Recent studies in the field of technology adoption have demonstrated that users' experiences as well as users' awareness have not been sufficiently considered. For example, Shaikh and Karjaluo (2015) analyzed a total of 55 studies, from January 2005 to March 2014, and reported that although several factors have been identified as relevant factors to be considered (e.g., users' experience and users' awareness), they have not been sufficiently measured. Awareness has been shown to have a positive effect on Information Technology (IT) adoption in 3G mobile phones' usage (Velmurugan & Velmurugan, 2014). Likewise, Shaikh and Karjaluo (2015) demonstrated the importance of considering users' awareness with respect to m-banking use. Amin and Ramayah (2010) made similar claims about the link between users' experiences and the use of m-banking.

As m-banking is one of the latest mobile technology efforts worldwide (Shaikh & Karjaluo, 2015), technology-based studies recommend that users' intentions toward m-banking use should be investi-

gated. In some developing countries, in which consumers have more mobile phone experience, m-banking is accepted and prevalent (Chitungo & Munongo, 2013). For example, in Iran (Asfahan City), customers are more likely to use m-banking services if they perceive these services as consistent with their past experience (Kabiry & Forghani, 2013). This provides circumstantial proof that users' experiences have a significant impact on their interest and willingness in adopting m-banking services. This factor is present even in other technologies; for example, in website use, Castañeda, Muñoz-Leiva, and Luque (2007) found that users' experiences with websites have a moderating effect. Users with less experience perceive ease of use as a more significant factor in deciding to revisit the website, while more experienced users perceived more usefulness in the website experience. Even in Health IT use, previous IT experiences and knowledge related to the IT function remain predictors in consumers' willingness to use Health IT (Kijisanayotin, Pannarunothai, & Speedie, 2009).

In developed countries, the majority of the populations and business organizations are engaged in mobile services due to their advanced technological development. For instance, in the United States of America (USA), many people own and use smart phones for m-banking services. In the United Kingdom (UK), the m-banking industry and adoption of m-banking services is growing 30% annually. In general, m-banking users in developing countries are concerned about accessibility and costs, while those in developed countries are more interested in the convenience (Mnenwa, 2012). The knowledge and information of m-banking services availability to bank customers is inadequate. A lack of both awareness and trust in the banking service are major reasons for the limited adoption of m-banking in South Africa (Porteous, 2006). In Dar es Salaam, the majority of people are engaged in m-banking services (Mnenwa, 2012).

A survey by KPMG (2011) reported that only 54% of users in the Middle East are engaged in m-banking. It is worth mentioning that 38% of Middle Eastern users stated that they are unaware that their banks offer banking services via mobile devices. The report suggests that the most significant factor impacting m-banking use was the users' experience with mobile phones generally. The majority of bank customers are likely unaware of the existence, cost, risks, benefits, and know-how to use mobile phones for banking services (Qasem, 2014). Merely presenting the service to customers is not enough (Koksal, 2016), since customers like to be informed, to be advised, to be given a choice, and to approve a technology before accepting or rejecting it (Chitungo & Munongo, 2013). That is, users only become ready to decide to use a particular technology or service when they are fully aware of the capabilities and functions of that technology or service.

### ***A REVIEW OF THEORETICAL MODELS OF TECHNOLOGY BANKING ACCEPTANCE***

Many studies have measured the effect of users' experiences as well as users' awareness on users' technology banking acceptance based on empirical acceptance theories. A summary of these studies are shown in Table 1.

**Table 1. Studies based on empirical acceptance theories: the effect of users' experiences and awareness on users' technology banking acceptance**

<b>Author(s)</b>	<b>Theories</b>	<b>Data collection technique and scope</b>	<b>Main findings</b>
Safeena & Date (2010)	Technology Acceptance Model	Interviews and survey in India	Consumer awareness significantly affects online banking use
Safeena, Kammani, & Hundedwale (2012)	Technology Acceptance Model	Interviews and survey in India	Consumer awareness significantly affects online banking use
Li & Zhang (2010)	Technology Acceptance Model	Survey questionnaire	Consumer experience is a factor affecting their decision to use m-banking

Author(s)	Theories	Data collection technique and scope	Main findings
Amin, Hamid, Lada, and Anis (2008)	Technology Acceptance Model	Survey questionnaire in Malaysia	Amount of information significantly influences the use of m-banking
Al-Somali, Gholami, and Clegg (2009)	Technology Acceptance Model	Survey questionnaire in Saudi Arabia	The awareness of online banking and its benefits have significant effects on the perceived usefulness of online banking acceptance.
Chung and Kwon (2009)	Information System Success Model	Questionnaire	Mobile experience tends to strengthen the relationship between technological characteristics and a customer's intention to use m-banking.
Cruz, Barretto, Muñoz-Gallego, and Laukkanen (2010)	Technology Acceptance Model, and Theory of Resistance to Innovation	Survey questionnaire in Brazil	Lack of information (antonym awareness) is not significant in affecting consumers' use of m-banking.
Daud, Kassim, Said, and Noor (2011)	Technology Acceptance Model	Survey questionnaire in Malaysia	Customer awareness has significant effects on their intention to adopt m-banking
Ratten (2011)	Social Cognitive Theory	Survey questionnaire	Users with more experience using new technologies are more likely to use m-banking.
Lin (2013)	Fuzzy Evaluation Model	Fuzzy analytic hierarchy process	There are some differences between high and low experience groups regarding the evaluation of m-banking quality.
Venkatesh, Thong, and Xu (2012)	Theory of Acceptance and Use of Technology	Survey questionnaire	Experience fails to influence the effect of facilitating conditions on behavioral intention to use IT. However, experience can positively influence the effect of habits on behavioral intention. The effect of behavioral intention on use will decline with increasing experience. The effects of performance expectancy and effort expectancy on behavioral intention were all influenced by users' experience. Similarly, the effect of facilitating conditions on technology use was influenced by experience. One notable difference between the findings related to UTAUT and UTAUT2 is the effect was impacted by experience with the target technology.
Jaradat and Al Rababaa (2013)	Theory of Acceptance and Use of Technology	Survey questionnaire in Jordan	Experience has no moderating effect on the relationship between effort expectancy and behavioral intention to use m-commerce.

Author(s)	Theories	Data collection technique and scope	Main findings
Alsheikh and Bojei (2014)	Theory of Acceptance and Use of Technology	Survey questionnaire in Saudi Arabia	Mobile phone experience and awareness of m-banking services are affecting customers' intention mediated by the performance expectancy and effort expectancy to use m-banking.
Mohammadi (2015)	Technology Acceptance Model	Survey in Iran	Users' awareness of m-banking significantly affects their perceptions of the ease of use and usefulness.
Shih, Hung, and Lin (2010)	Elaboration Likelihood Model	Survey questionnaire	Consumers with more experience pay more attention to information provided by their banks about m-banking services

As shown in Table 1, acceptance theories, such as the Technology Acceptance Model (TAM), were used singularly by several studies, while in the Cruz et al. (2010) study, the researchers combined TAM with the Theory of Resistance to Innovation (TRI). Other studies have applied the Unified Theory of Acceptance and the Use of Technology (UTAUT), such as Venkatesh et al. (2012), Jaradat and Al Rababaa (2013), and Alsheikh and Bojei (2014). While Chung and Kwon (2009) applied the Information System Success Model (ISSM), Ratten (2011) used the Social Cognitive Theory (SCT), Lin (2013) developed a fuzzy evaluation model, and Shih et al. (2010) used the Elaboration Likelihood Model (ELM).

These varying models reveal that there is no ideal acceptance theory. Theoretical acceptance models have diverse features and limitations when it comes to examining technology usage. For example, the SCT focuses on a specific view—embracing the idea that individuals may learn about a certain technology or make assumptions about a certain technology through others' experiences (Bandura, 1986). While, TAM is commonly used to investigate technology acceptance, it is designed to be applied in the context of technology usage only (Alrafi, 2005). However, UTAUT is designed exclusively for assessing technology adoption, which is able to explain about 70% of the variance in users' behavioral intention to use a technology (Venkatesh et al., 2012). UTAUT offers more realistic analysis and a greater ability to explain user acceptance than any other acceptance theories. UTAUT is said to be the benchmark in information systems acceptance (Rodrigues, Sarabdeen, & Balasubramanian, 2016). UTAUT, one of the most common acceptance theories, captures the important aspects of several acceptance theories (Venkatesh, Morris, Davis, & Davis, 2003). UTAUT is theoretically innovative as it is derived from reviewing literature and integrating factors from eight existing acceptance theories. Hence, the improvement this study makes to UTAUT is to exclude redundancy of some constructs in order to contribute to building a unified view in these acceptance theories (Dwivedi, Rana, Chen, & Williams, 2011).

Meta-analysis on UTAUT by Dwivedi et al. (2011) revealed that only 21 studies out of 43 used the original constructs of UTAUT. Though experience, age, gender, and voluntariness of use are moderating variables considered in the original UTAUT (Venkatesh et al., 2003), these variables were used as external factors in some of the studies. A number of the studies made use of UTAUT and its factors without considering its constructs (Rodrigues et al., 2016). Perceived risk was one of the most common external factors employed. The analysis of the relationship amongst UTAUT factors and external factors reveals that perceived risk and experience has a significant effect on behavioral intention. This analysis demonstrates the need to present hypotheses in the UTAUT model different from the original UTAUT hypotheses. Further, the meta-analysis revealed that there were even some factors that elicited no effect on one another in UTAUT. For example, 27 studies exposed no relationship between facilitating conditions and behavioral intention; 18 studies exposed no relationship between social influence and behavioral intention; and 35 studies exposed no relationship between be-

havioral intention and use behavior. Therefore, the facilitating conditions, social influence, and use behavior were eliminated from the conceptual model of the current study. Williams, Rana, and Dwivedi (2015) reviewed 451 studies to analyze UTAUT use. They reported that only 16 studies tested all UTAUT factors. The majority of the surveyed studies demonstrated limitations in UTAUT rather than utilizing the theory as is (Rodrigues et al., 2016).

UTAUT is relatively new and innovative compared with the other acceptance models. These innovations have proved useful as UTAUT has been deemed valid and reliable in different contexts (Ghalandari, 2012; Gupta, Dasgupta, & Gupta, 2008; Venkatesh et al., 2003). These contexts include mobile services (Rao, Li, & Troshani, 2007) and developing countries (Ghalandari, 2012) such as Saudi Arabia. It is worth mentioning that only five studies have used the UTAUT to examine technology acceptance in Saudi Arabia (Rodrigues et al., 2016). The UTAUT is a useful model for examining user technologies like mobile devices (Stofega & Llamas, 2009). Since this study is interested only in the early stage of technology adoption, it did not need to utilize UTAUT2, as it covers additional factors in the post-adoption stage, such as continuance intention, hedonic motivation, price value, and habit. Further, price value and hedonic motivations are not applicable in the study, because m-banking services are offered for free in Saudi Arabia and m-banking services are not used for entertainment and recreational purposes (Alharbi, Papadaki, & Dowland, 2016).

As shown in Table 1, several studies have investigated the influence of consumers' awareness on online banking, not particularly on m-banking (e.g., Al-Somali et al., 2009; Safeena & Date, 2010; Safeena et al., 2012). Venkatesh et al. (2012) investigated the effect of customers' awareness and experience on IT, but did not include banking technology in that study. In addition, some studies explored technology awareness, but from different perspectives, such as, "amount of information" by Amin et al. (2008) and "lack of information" by Cruz et al. (2010). The experience variable has been similarly studied in various forms (e.g., customers experience, mobile experience, mobile phone experience, experience of using new technologies, experience of using a website, IT experience, and work experience). Needless-to-say, because these different forms of experience are diverse in meaning, they led to different effects. Therefore, there is need to specify what critical factors need to be examined. Previous studies have reported conflicting findings regarding the effect of user awareness and experience. Yet, most studies have reported that these factors have a potential for significant impact. Few on these studies have been carried out in the Middle East; such studies include one by Jaradat and Al Rababaa (2013), which studied m-commerce in general in Jordan, and two that studied m-banking in Saudi Arabia (Alsheikh & Bojei, 2014; Al-Somali et al., 2009).

This study seeks to predict the controlling factors and their effects on users' behavioral intention to use m-banking in Saudi Arabia. Literature has demonstrated the UTAUT model is applicable for this study. Moreover, many earlier studies have demonstrated the importance of factors such as users' awareness and users' experiences as controlling factors. Therefore, this study used UTAUT as a theoretical base to develop a better research conceptual model. Just as this study supposes, exploring different contexts and/or technologies would likely lead to various changes in acceptance theories. Such changes may include developing novel hypotheses; disproving accepted hypotheses; revealing different effect directions; and altering the degree of significance of the effect or relationships among factors. Although these changes may reveal failures within acceptance theories, it would also lead to new findings (Alvesson & Kärreman, 2007).

## **THE CONCEPTUAL RESEARCH MODEL**

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This study's conceptual research model used part of Alsheikh and Bojei's (2014) m-banking model, which applied the original UTAUT, as a foundation. Two variables (mobile phone experience and awareness of m-banking services) are integrated into the adapted part of the application of Alsheikh and Bojei's (2014) m-banking model. Based on the indications from previous studies that the two

variables significantly influence user adoption of m-banking, these control variables are synthesized to investigate users' behavioral intentions to use m-banking services in Saudi Arabia.

Using the definitions and findings of the preceding literature, these hypotheses were formulated, and, thus, the research model was developed. Figure 1 illustrates the conceptual research model, which is founded on Alsheikh and Bojei's (2014) m-banking model.

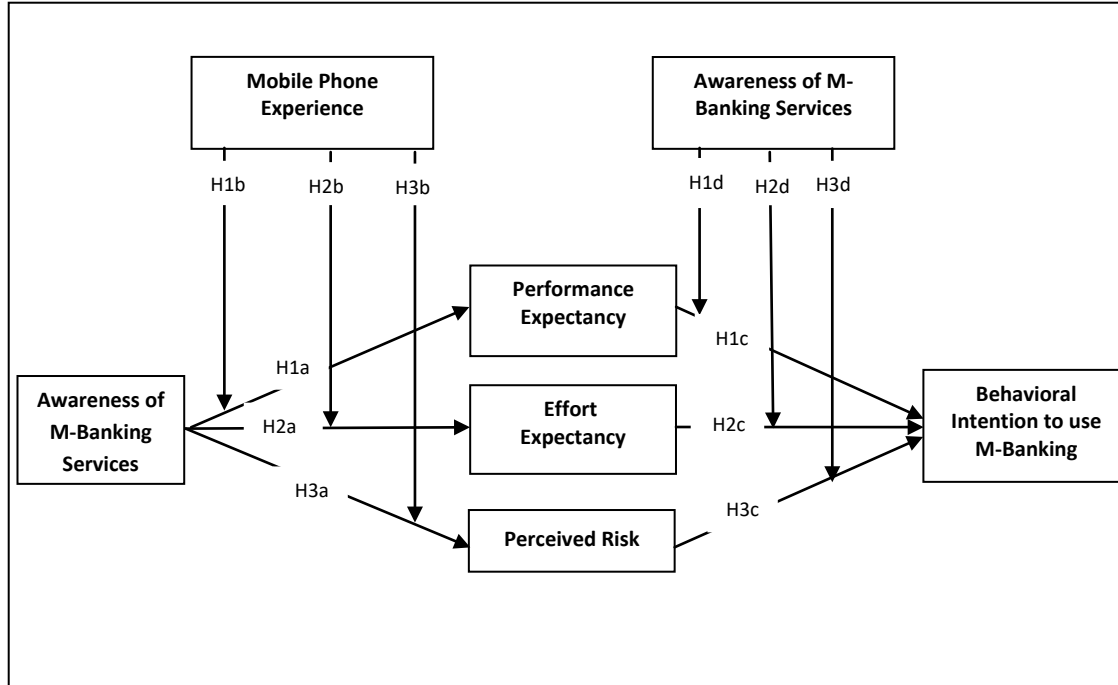


Figure 1. Conceptual research model

## HYPOTHESIS DEVELOPMENT

### Awareness of services

In the m-banking services field, awareness was defined by Alsaab (2009) as “knowledge of the existence of m-banking system and its benefits.” In other words, awareness reflects the extent to which users have information and knowledge about m-banking services technology, its possible risks, and benefits. Sathye (1999) reported that, in Australia, users' concerns over security are associated with their lack of awareness of internet banking adoption. Howcroft, Hamilton, and Hewer (2002) reported similar findings from the United Kingdom. Suganthi, Balachandher, and Balachandran (2001) stated that users' awareness affects the adoption of internet banking services in Malaysia. It is notable that the above definitions of awareness include issues related to security risks, benefits, and adoption of a system.

The effects of awareness have been evidenced in the literature. For example, Amin et al. (2008) discovered that the lack of m-banking use is due to the lack of awareness about such technology and its services. Laforet and Li (2005) reported the same findings in Finland. In the same vein, Alsheikh and Bojei (2014) reported that users' awareness of services increases m-banking use mediated by their performance expectancy and effort expectancy of such technology. In Saudi Arabia, Al-Somali et al. (2009) found that awareness affects the perceived usefulness (associated with performance) as well as perceived ease (associated with effort) of internet banking use. Increasing user awareness of how m-banking services work and what benefits such services offer helps build users' trust in such services and alleviates their security concerns. Thus, to encourage bank customer use of m-banking, banks should provide information about m-banking to people, increasing overall awareness of m-banking



(Al-Somali et al. 2009). Bamoriya and Singh (2012), Laukkanen and Kiviniemi (2010) and Palani and Yasodha (2012) reported that awareness (information provided by banks) diminishes perceived risks and enhances positive user expectancy of m-banking. Osakwe and Okeke (2016) stated that users are more concerned with risk when using mobile devices and pointed out the need for awareness creation, taking into consideration the level of awareness of non-adopters and early adopters about the security and benefits of m-money. Therefore, this study hypothesizes the following:

H1a: Awareness of services has a positive direct effect on performance expectancy.

H2a: Awareness of services has a positive direct effect on effort expectancy.

H3a: Awareness of services has a negative direct effect on perceived risk.

### **Mobile phone experience as a moderator variable**

The concept of experience in the current study focuses on experience of using a mobile phone, referring to “the degrees to which banks’ consumers have mobile phone usage experience” (Bouwman, Carlsson, Walden, & Molina-Castillo, 2008). Previous studies have proved that experience plays a vital role in the study of m-banking use. For example, Taylor and Todd (1995) discovered a major increase of users’ perception of effort expectancy because of their experience. Prior (positive or negative) experiences of users’ with mobile services would affect their perceptions towards those services in general (Rao et al., 2007; Taylor & Todd, 1995) as well as in m-banking services in particular (Lee, Lee, & Eastwood, 2003).

In general, the more experienced consumers are with new technologies, the greater the expectation that they will use m-banking (Ratten, 2011). Similar findings were reported by Laforet and Li (2005) in China. Venkatesh and Morris (2000) applied the “experience” factor when they developed TAM2, finding that, after frequent use of a system, users form perceptions about that system’s usefulness based on the benefits they experienced. In the same vein, Laukkanen (2007) revealed that m-banking use is greater amongst customers with more experience as they do not feel as if this particular technology increases their risk of financial harm. Furthermore, experience with mobile phones is a very essential risk-related factor in technology-based banking services (Lee et al., 2003). That is, mobile phones, for case in point, might be perceived as limiting the use of mobile services (Siau & Shen, 2003). In Saudi Arabia, the users feel that they are taking risks when using a new technology, especially in the initial stage of use (Baker, Al-Gahtani, & Hubona, 2007; Mallenius, Rossi, & Tuunainen, 2007).

In addition, because m-banking is an alternative interaction channel offered for bank consumers, there is a need to address the issues related to their expectations about such channel encounter experiences to enhance their intentions to use (Kumar, Rejikumar, & Ravindran, 2012). A study conducted by Alsheikh and Bojei (2014) found that users’ prior mobile phone experience has a direct effect on the user’s performance expectancy as well as effort expectancy of m-banking. Jaradat and Al Rababaa (2013) studied the effect of “experience” on m-commerce, without focusing on a specific experience or on m-banking. They found no moderating effect on the relationship between effort expectancy and behavioral intention to use m-commerce. Yet, no study investigated the moderating effect of users’ mobile phone experience on the relationship between their awareness of services and performance expectancy as well as effort expectancy of m-banking. Therefore, this study hypothesizes the following:

H1b: Mobile phone experience has positive moderating effects on the relationship between awareness of services and performance expectancy

H2b: Mobile phone experience has positive moderating effects on the relationship between awareness of services and effort expectancy

H3b: Mobile phone experience has negative moderating effects on the relationship between awareness of services and perceived risk.

### **Performance expectancy**

Performance expectancy refers to “the degree to which an individual perceives that use of a new innovation can improve his/her performance” (Rodrigues et al., 2016). Performance expectancy shows the highest number of significant relations with behavioral intention (Dwivedi et al., 2011). Users have enhanced expectations when they accept a specific service that fulfils their needs. Previous studies (Littler & Melanthiou, 2006; Liu, Huang, & Zhu, 2008; Luarn & Lin, 2005; Venkatesh, Morris, Davis, & Davis, 2003) discovered that performance expectancy has a positive effect on a user's behavioral intention to use internet banking services. Alsheikh and Bojei (2014) and Zhou, Lu, and Wang (2010) reported similar findings in m-banking, while Jaradat and Al Rababaa (2013) reported similar findings about m-commerce in Jordan. Therefore, this study hypothesizes the following:

H1c: Performance expectancy has positive direct effects on behavioral intentions to use m-banking.

### **Effort expectancy**

Effort expectancy is “the degree to which an individual perceives that the innovation will be easy to use” (Rodrigues et al., 2016). Indeed, users' perceptions of ease of use can be raised when they are using a simple technology, which requires little knowledge, and is, therefore, easy to run. Several researchers (Lauren & Lin, 2005; Littler & Melanthiou, 2006; Venkatesh et al., 2003) found that the greater the user's effort expectancy, the greater the user's behavioral intention to use e-banking services. This is consistent with results reported about m-commerce by Jaradat and Al Rababaa (2013) in Jordan and results about m-banking by Alsheikh and Bojei (2014) in Saudi Arabia. However, the opposite was reported by Liu et al. (2008) in internet banking. Therefore, this study hypothesizes the following:

H2c: Effort expectancy has positive direct effects on behavioral intentions to use m-banking.

### **Perceived risk**

The definition of perceived risk has been linked with potential financial risks in online transactions (Im, Kim, & Han, 2008). Individuals' perceptions of risk regarding a specific technology are deeply associated with the use of that technology (Laforet & Li, 2005; Yang, 2009). Perceived risk has been measured as a crucial variable in the use of mobile services because as mobile services grow, so do the threats to financial security.

The literature provided evidence of the significant role of users' perception of risk (e.g., Alsheikh & Bojei, 2014; Chitungo & Munongo, 2013; Gu, Lee, & Suh, 2009; Hanafizadeh, Behboudi, Koshksaray, & Tabar, 2014; Hassan, Rahman, Sharmin, & Rabbany, 2014; Liu et al., 2008; Luo, Li, Zhang, & Shim, 2010; Venkatesh & Morris, 2003; Wu & Wang, 2005; Wessels & Drennan, 2010). These studies found that perceived risk has an inhibiting effect on users' behavioral intentions to use m-banking. Al-Jabri and Sohail (2012) reported the same results in Saudi Arabia. However, while Ndubisi and Sinti (2006) reported a weak influence on users' intention to use internet banking, Al-Soufi and Ali (2014), in contrast, found no impact in Bahrain. This inconsistency may arise from the fact that risks related to m-banking are perceived as greater than the risks of internet banking generally. In this study, perceived risk refers to the extent to which a bank customer's expectation of financial risk impacts his or her decision to use m-banking. Therefore, this study hypothesizes the following:

H3c: Perceived risk has negative direct effects on behavioral intentions to use m-banking.

### **Behavioral intention to use**

Behavioral intention to use is a chief concept of UTAUT in Venkatesh et al. (2003) and is also the most significant determinant of an individual's actual behavior (Zhang, Zhu, & Liu, 2012). It was defined by Fishbein and Ajzen (1975) as “the strength of one's intention to perform a specific behav-

ior.” In this study, the user’s behavioral intention to use m-banking is the sole dependent factor to be measured.

### **Awareness of m-banking services as a moderator variable**

Based on previous studies, user awareness of mobile services should significantly increase the performance expectancy and effort expectancy of the service, while the perception of risk should decrease (Alsheikh & Bojei, 2014). Lee, Mattila, and Shim (2007) conducted interviews with non-mobile banking users, finding that a lack of knowledge and perceived risk contribute to resistance of m-banking use. In Saudi Arabia, most bank customers were not aware of the possibility for risks in e-banking services (Qasem, 2014).

The role of users’ awareness was evidenced in the literature. A study by Al-Somali et al. (2009) stated that user awareness could shape perceptions of ease (or difficulty) of internet banking (not m-banking) use in Saudi Arabia. Mohammadi (2015) reported that awareness significantly affected Iranian users’ perceptions of the ease and usefulness of m-banking. Similar findings appeared in Malaysia (Amin et al., 2008), in Bangladesh (Hassan et al., 2014), and in Finland (Laforet & Li, 2005). Abubakar and Hartini (2013) reviewed the literature, determining that “technology awareness” would moderate the effect that performance expectancy and effort expectancy would have on behavioral intention to use point of sale technology. Therefore, awareness is expected to control the relationship between users’ expectancy of performance, effort expectancy, and perception of risk on the use of m-banking. Therefore, this study hypothesizes the following:

H1d: Awareness of services has positive moderating effects on the relationship between performance expectancy and users’ behavioral intention to use m-banking

H2d: Awareness of services has positive moderating effects on the relationship between effort expectancy and users’ behavioral intention to use m-banking

H3d: Awareness of services has positive moderating effects on the relationship between perceived risk and users’ behavioral intention to use m-banking.

## **METHODOLOGY**

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### ***RESEARCH INSTRUMENT***

The quantitative method used to collect data was a survey questionnaire technique. The questionnaire was deemed to be the most appropriate tool to assist the respondents in understanding and answering the questions. The survey approach is appropriate when the factors being surveyed have been measured by previous researchers. Accordingly, a questionnaire with non-structured (close-ended) questions was formulated; this question format enhanced the respondents’ ability to understand and properly respond to the questions (Sekaran, 2009). The survey questionnaire consisted of two main sections. The first section asked questions about the respondents’ demographic information (consisting of six questions asking for age, gender, education level, and income), whether or not the respondent had used m-banking, and whether or not they have owned a smart device. The respondents were asked about their income in Saudi Riyal currency, as this is the official currency in Saudi Arabia (However, the amounts are presented in United States currency, the dollar, for easy comprehension by global researchers). The second section includes 29 questions involving the seven factors associated with the conceptual research model. Each variable was measured by at least three items (questions) to assist in attaining valid constructs. The 5-point Likert scale was used for measurement variables (1= strongly disagree, 5= strongly agree) in an attempt to keep results within a narrow data dispersion.

The researcher adapted the questions from several studies. For example, mobile phone experience was adapted from Al-Ghaith et al. (2010); awareness of m-banking services from Al-Somali et al.

(2009), Cruz et al. (2010), and Laukkanen and Kiviniemi (2010); performance expectancy from Liu et al. (2008); effort expectancy from Al-Ghaith et al. (2010), Liu et al. (2008), and Venkatesh et al. (2003); perceived risk from Wu and Wang (2005) and Riquelme and Rios (2010); and, finally, behavioral intention to use from Venkatesh et al. (2003) and Alsheikh and Bojei (2014). All the questionnaire items are shown in Appendix A. Further, the questionnaire was formulated primarily in English; however, it was necessary to translate it into Arabic in order to conduct this study in Saudi Arabia.

Prior to actual data collection, a pilot study was conducted in order to guarantee the questionnaire's reliability and validity. For reliability, 30 respondents were asked to fill out the questionnaire; then, Cronbach's alpha was measured, resulting in 0.88 for all instrument questions. The instrument's validity was confirmed by submitting the questionnaire to both academic staff and members of the public for comments, and their comments were taken into consideration. In addition, four experts were asked to check the questionnaire. Finally, the survey was reviewed by five members of the public to ensure that it clear and easy to understand.

### ***DATA COLLECTION***

This study collected data using a cross-sectional survey. It is important to note that it was unnecessary to repeatedly measure users' adoption behaviors because these perceptions typically do not change over short period of times; thus, measurements are only necessary after longer periods of time have passed. A random sample, targeting banking customers in Saudi Arabia, was selected. Paper-based questionnaires and online questionnaire distribution techniques were adopted. For the most part, the questionnaire was administered personally by the authors through hand-to-hand distribution. However, to reach respondents in different regions of the country, the questionnaire was distributed online using a social media application. The distribution was located in various head cities in Saudi Arabia, such as Riyadh, Al Dammam, Jeddah, Al Hota, Tabuk, Makkah, Al Madinah, and Hail. Data was collected between October 22, 2015 and April 7, 2016. Of the 3460 questionnaires distributed only 389 (11.24%) provided valid responses eligible for data analysis.

## **DATA ANALYSIS**

### ***DEMOGRAPHIC PROFILE***

Males were dominant in the sample (86.4%) as shown in Table 2. Based on Saudi beliefs, males are responsible for finances, and they also make up the majority of the workforce in this country (Alharbi et al., 2016).

**Table 2. Demographic profile of the respondents**

<b>Demographic factor</b>	<b>Categories</b>	<b>Frequency</b>	<b>Percentage</b>
Age	< 20	14	3.6
	20-29	155	39.8
	30-39	138	35.5
	40-49	58	14.9
	> 50	24	6.2
Gender	Male	336	86.4
	Female	53	13.6

Demographic factor	Categories	Frequency	Percentage
Education Level	High School	49	12.6
	Diploma	39	10.0
	Bachelor Degree	181	46.5
	Master Degree	61	15.7
	PhD Degree	59	15.2
Income (monthly)	Less than 1080 USD	92	23.7
	1080- 3700 USD	175	45
	More than 3700 USD	122	31.3

### *SCALES RELIABILITY TESTING*

Cronbach's alpha were calculated for each set of items of every single construct, the resulting values were as follows: 0.838 for the mobile phone experience, 0.859 for awareness of m-banking services, 0.894 for performance expectancy, and 0.860 for perceived risk. According to Pallant (2007), these values are within the preferred levels of reliability. Effort expectancy and behavioral intention to use m-banking got 0.901 and 0.914 Cronbach's alpha values respectively, which are within the preferred levels of reliability. Thus, all the scales are reliable.

### *EXPLORATORY FACTOR ANALYSIS (EFA)*

Performing exploratory factor analysis (EFA) was deemed necessary to examine if the items formed the expected number of factors. It also discovers if each individual item was loaded on it appropriate factor as expected (M. C. Lee, 2009). The Principal Component Analysis (PCA) with Varimax rotation method was used to assess the validity of the constructs. This method determines any potential low and/or double loading item(s) and uses a threshold Eigenvalue of 1.0 (Hair, Black, Babin, & Anderson, 2010), which had loading in different components, and awareness of services, which detected one double loading component. These odd loading and double loading data were omitted (See Appendix B). Moreover, Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity (BTS) were used to measure the sampling adequacy, since obtaining acceptable values of these tests guarantee the appropriateness of EFA analysis. As shown in Table 3, the KMO value was 0.892, which was within the acceptable range, where the minimum acceptable value is 0.70. The BTS reflected significant results (0.01), since the value was less than 0.05. Accordingly, EFA was deemed proper for this study.

**Table 3. KMO and Bartlett's Test**

<b>Kaiser-Meyer-Olkin Measure of Sampling Adequacy</b>	<b>.892</b>	
<b>Bartlett's Test of Sphericity</b>	Approx. Chi-Square	5578.203
	df	406
	Sig.	.000

***HYPOTHESES TESTING***

Linear standard and hierarchical regression were used to test the hypotheses. Hierarchical regression was deemed necessary to test the variables' potential effects. Table 4 shows the results.

As shown in Table 4, H1a is supported as the awareness of services was a significant factor in increasing performance expectancy. However, unexpectedly, mobile phone experience had a negative ( $\beta=-.092$ ) moderating effect on performance expectancy, which was inconsistent with the effect hypothesized. Therefore, the H1b is not supported. Similar results were reported for H2a and H2b. Users' awareness of services failed to affect their perception of risk in m-banking. Moreover, their mobile phone experience was also not significant ( $\text{Sig.}>0.05$ ) in affecting their perception of risk in m-banking. Therefore, H3a and H3b are not supported.

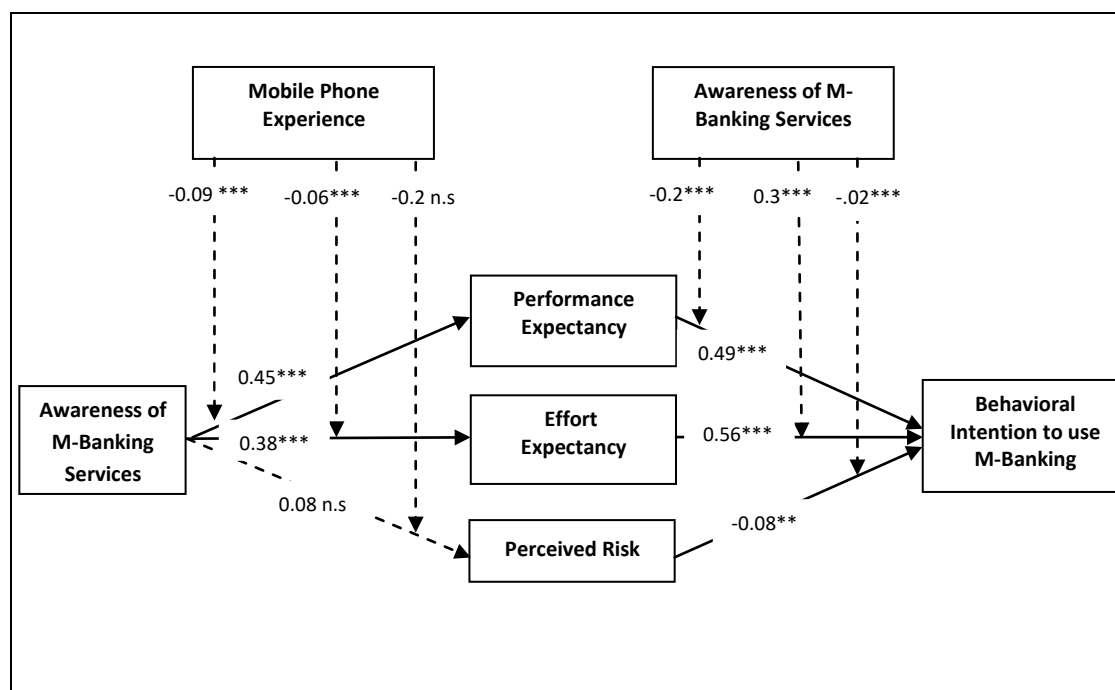
**Table 4. The results of testing the hypotheses**

H code	H statement	Direct effects			Direct with moderator effects			Result
		Un-stand coefficient	R2	Sig.	Un-stand coefficient	R2	Sig.	
H1a	AW → PE	0.457	0.133	0.000	0.439	0.188	0.000	Supported
H1b	MPE moderating H1a				-.092		0.000	Not Supported
H2a	AW → EE	0.384	0.138	0.000	0.371	0.181	0.000	Supported
H2b	MPE moderating H2a				-.067		0.000	Not Supported
H3a	AW → PR	0.080	0.004	0.204	0.075	0.009	0.235	Not Supported (not sig)
H3b	MPE moderating H3a				-0.026		0.180	Not Supported (not sig)
H1c	PE → BIU	0.494	0.478	0.000	0.463	0.488	0.000	Supported
H1d	AW moderating H1c				-0.020		0.007	Not Supported
H2c	EE → BIU	0.565	0.423	0.000	0.521	0.442	0.000	Supported
H2d	AW moderating H2c				-0.034		0.000	Not Supported
H3c	PR → BIU	-0.086	0.014	0.020	-0.089	0.028	0.015	Supported
H3d	AW moderating H3c				-0.024		0.017	Not Supported

AW = Awareness, MPE = Mobile Phone Experience, PE = Performance Expectancy, EE = Effort Expectancy, PR = Perceived Risk, BIU = Behavioral Intention to Use

There were positive ( $\beta=0.494$ ) effects from performance expectancy in determining users' behavioral intentions to use m-banking. Therefore, the H1c is supported. However, when the "awareness of services" factor comes into the equation as a variable; it decreased the effect ( $\beta=0.463$ ) in H1c, which is inconsistent with the relevant hypothesis. Thus, the H1d is not supported. Effort expectancy in-

creased users' behavioral intention to use m-banking ( $\beta=0.565$ ), but, unexpectedly, awareness of users' services decreased this effect. As a result, H2c is supported, but not H2d. As hypothesized in H3c, perceived risk negatively affects users' behavioral intentions to use m-banking ( $\beta=-0.086$ ) with (Sig=0.02). However, awareness of services did not affect this relationship; therefore, H3d is not supported. It is noted that performance expectancy as well as effort expectancy are strong indicators for predicting a user's intention to use m-banking. In short, data analysis revealed that the results supported all hypothesized direct effects except one and rejected all the hypotheses related to the effects of the control variables. Figure 2 illustrates the developed conceptual research model, which was tested and proved by testing the hypotheses.



\*\*\*:  $p < 0.01$ ; \*\*:  $p < 0.05$ ; \*:  $p < 0.10$ ; n.s.: not significant.

—————> Supported,      - - - - -> Not supported

Figure 2. Developed conceptual research model

## FINDINGS AND IMPLICATIONS

The results proved that users' awareness of services is an important factor for increasing performance expectancy and effort expectancy, which is consistent with the results reported by Alsheikh and Bojei (2014) in m-banking. The negative effect of awareness of services on perceived risk is inconsistent with several studies, including Bamoriya and Singh (2012), Laukkanen and Kiviniemi (2010); and Palani and Yasodha (2012). It is worth mentioning that users' mobile phone experiences did not appear to positively moderate any effect of users' awareness of m-banking services, including users' performance expectancy, effort expectancy, and perceived risk, regarding their intention to use such services. This is similar to the results reported by Jaradat and Al Rababaa (2013) that users' experiences could not moderate the relationship between effort expectancy and behavioral intention to use m-commerce in Jordan.

Users' performance expectancy could motivate their intention to use m-banking—this finding is consistent with the studies conducted by Alsheikh and Bojei (2014) and Zhou et al. (2010) in m-banking, and Jaradat and Al Rababaa (2013) in m-commerce. The same finding was reported about effort expectancy, which is consistent with reports about m-commerce by Jaradat and Al Rababaa (2013) in

Jordan and reports about m-banking by Alsheikh and Bojei (2014) in Saudi Arabia. Users' perceptions of risk did act as inhibiting factors with regard to their intention to use m-banking, which is consistent with Al-Jabri and Sohail (2012), Alsheikh and Bojei (2014), Chitungo and Munongo (2013), Hanafizadeh et al. (2014), Hassan et al. (2014), Luo et al. (2010), and Wessels and Drennan (2010). However, this result contrasted with AlSoufi and Ali (2014) who reported no impact in Bahrain. Users' awareness of m-banking services failed to positively impact the users' intentions to use m-banking.

The findings of this study have implications from both theoretical and practical perspectives. Theoretically, this study proves the validity of UTAUT in the context of m-banking adoption, specifically in Saudi Arabia. This study has managed to reveal insights regarding new factors that could determine behavioral intentions to use m-banking by synthesizing two control variables ("users' awareness of m-banking services" and "mobile phone experience") into the UTAUT. This study discovered that users' awareness of m-banking services and their experience in using mobile phones were not critical in affecting a customer's intention to use m-banking. The performance expectancy and effort expectancy, in order of their effecting strength, were salient factors in predicting a customer's intention to use m-banking. On the other hand, this study discovered that users' perception of risk does not play a salient role in influencing a customer's intention to use m-banking. Last but not least, this study added to the literature of m-banking adoption studies and developed a new theoretical model, which is applicable in different countries, different contexts, and with different technologies.

From a practical perspective, banks in Saudi Arabia can use the data collected from this study to develop a strategy to increase customer use of m-banking services by focusing on raising customer awareness. This awareness should include keeping customers informed (regardless of their range of mobile phone experience) about the availability of the m-banking services, advantages of use, and ease of use of such services (Al-Jabri & Sohail, 2012; Sanakulov & Karjaluo, 2015). That is, merely offering and implementing m-banking services is not sufficient, as it does not guarantee wide adoption. Therefore, banks should target customers by distributing useful information and applying measures to increase acceptance, such as service differentiation. Some studies point out that the main reason that m-banking is not more popular is that alternative banking channels, like ATMs and online banking, exist (Gupta, Kaur, & Kang, 2013). Thus, it seems that in order to sustain m-banking services, banks need to introduce something imaginative to convince bank customers to abandon existing service channels and adopt m-banking services. Banks should make m-banking services the easiest to use, help customers conduct bank interactions either that they cannot do any other way or that are just easier via mobile services. Banks can expect that customers intend to use m-banking for the same interactions they use e-banking for. Banks are advised to change consumers' negative image about using m-banking services by executing experiential marketing. Experiential marketing is effective in increasing willingness and changing the thoughts of consumers who have a negative image about m-banking (Yu & Chantatub, 2016).

Banks should understand their customers' needs by not only soliciting feedback directly from the customers but also by listening to them using other methods. For example, banks should use videos to respond to/ or get opinions from customers. This makes known that banks are interested in customers' opinions and sets expectations about the progress of development. Such forms of communication between bank and customer, underscored by extensive testing to assure that applications and sites function in a mobile setting, can help design and build m-banking services based on a deeper understanding of customers' needs.

Though banks should use SMS banking, e-mails, brochures, and social networks to raise users' awareness of m-banking services, such efforts do not help reduce consumers' perceptions of risk in using m-banking. Therefore, to build user confidence in m-banking security, banks should provide adequate protection from privacy violations (Luarn & Lin, 2005) by implementing procedures that improve the security of m-banking systems, such as registering devices or SMS two-factor. To that end, banks are advised to design a secure tool for customer recognition, for instance, a system



equipped with unique attributes, facial characteristics, fingerprints, and voice patterns (Mohammadi, 2015). In addition, banks should make additional support channels, like user-manuals and online help, available to customers as suggested by Zhou et al. (2010) in order to minimize the perceived risk (Luo et al., 2010).

## CONCLUSION, LIMITATIONS, AND FUTURE RESEARCH

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Although smart phones have become prolific, relatively few people have adopted m-banking services. There is limited m-banking adoption in different parts of the world. For example, in Iran, people were affected by their limited awareness of m-banking services (Mohammadi, 2015). The same findings were reported in Malaysia (Amin et al., 2008), in Bangladesh (Hassan et al., 2014), and in Finland (Laforet & Li, 2005). Malaquias and Hwang (2016) observed low m-banking adoption in Brazil, reporting negative effects of trust in m-banking and calling for an examination of the “trust” factor in developing countries. Even in the global force country (i.e., China), there is distrust in users’ perceptions of m-banking, making it necessary to keep users informed (To & Lai, 2014). In order for this mobile service to thrive, banks must understand what leads people to adopt m-banking. To that end, this study used the UTAUT-based model to assess technology acceptance, as this model is more effective than other models in explaining users’ behavioral intention to use a technology. This study developed a new conceptual model that integrally focuses on users’ awareness and experience as antecedents of m-banking adoption; and highlighted the importance of differentiate between measuring the users’ characteristics in adopting e-banking in general, or m-banking services in particular. In addition, this type of model has the ability to synthesize new control variables as well as to study technology acceptance in developing countries. This study, based on an extended UTAUT model, set out to discover what factors might affect customers’ intentions to use m-banking in Saudi Arabia. Ultimately, this study produced helpful results and a new m-banking conceptual model.

There are several limitations that must be taken into consideration for future research. First, since the awareness of services variable failed to affect perceived risk, future researchers are advised to examine other factors, such as trust, culture, and/or credibility. Second, although the population sample was selected using a simple random sampling technique, stratified sampling may be a more suitable method, given that experience and awareness factors were measured. Third, the research examines the adoption of m-banking services in general with no focus on a specific type of m-banking. Thus, it may be fruitful to study the adoption of different systems of m-banking services. Lastly, future researchers should apply the conceptual model developed in this study in different settings, different countries, and to different technologies.

## REFERENCES

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- Abubakar, F. M., & Hartini, A. B. (2013). The moderating effect of technology awareness on the relationship between UTAUT constructs and behavioural intention to use technology: A conceptual paper. *Australian Journal of Business and Management Research*, 3(2), 14-23.
- Accenture (2013). *Mobile web watch 2013: The new persuaders*. Retrieved from <http://www.accenture.com/SiteCollectionDocuments/PDF/Technology/accenture-mobile-web-watch-2013-survey-new-persuaders.pdf>
- Alafeef, M., Singh, D., & Ahmad, K. (2011). Influence of demographic factors on the use level of mobile banking applications in Jordan. *Journal of Convergence Information Technology*, 6(12), 107-113. <https://doi.org/10.4156/jcit.vol6.issue12.14>
- Al-Ghaith, W. A., Sanzogni, L., & Sandhu, K. (2010). Factors influencing the use and usage of online services in Saudi Arabia. *The Electronic Journal of Information Systems in Developing Countries*, 40(1), 1-32.
- Alharbi, N., Papadaki, M., & Dowland, P. (2017). The impact of security and its antecedents in behaviour intention of using e-government services. *Behaviour & Information Technology*, 36(6), 620-636. <https://doi.org/10.1080/0144929X.1269198>

## Examination of Customers' Mobile Phone Experience and Awareness of M-Banking

- Al-Hunaiyyan, A., Bima, A. T., Idris, N., & Al-Sharhan, S. (2017). A cognitive knowledge-based framework for social and metacognitive support in mobile learning. *Interdisciplinary Journal of Information, Knowledge, and Management*, 12, 75-98. <https://doi.org/10.28945/3670>
- Al-Jabri, I. M., & Sohail, M. S. (2012). Mobile banking use: Application of diffusion of innovation theory, *Journal of Electronic Commerce Research*, 13(4), 379-391.
- Al Khasawneh, M. H. (2015). An empirical examination of consumer adoption of mobile banking (M-Banking) in Jordan. *Journal of Internet Commerce*, 14(3), 341-362. <https://doi.org/10.1080/15332861.1045288>
- Amin, H., & Ramayah, T. (2010). SMS banking: Explaining the effects of attitude, social norms and perceived security and privacy. *Electron. J. Inform. Syst. Dev. Countries*, 41(2), 1-15.
- Amin, H., Hamid, M., Lada, S., & Anis, Z. (2008). The use of mobile banking in Malaysia: The case of Bank Islam Malaysia Berhad (BIMB). *International Journal of Business and Society*, 9(2), 43-53.
- Alrafi, A. (2005). Technology acceptance model: Critical analysis with reference to managerial use of information and communication technology. *Innovation North Research Conference, Leeds Metropolitan University, UK*, 1-12. Retrieved from <http://www.leedsmet.ac.uk/inn/RIP2005-4.pdf>
- Alsaab, S. A. (2009). *SMS banking in Saudi Arabia*. Unpublished masters dissertation, University Utara Malaysia, Kedah.
- Alsheikh, L., & Bojei, J. (2014). Determinants affecting customer's intention to use mobile banking in Saudi Arabia. *Int. Arab J. e-Technol.*, 3(4).
- Al-Suwaiyel, M. (2007, June). *Telecom sector reforms in Saudi Arabia: Towards full market liberalization*, Paper presented at the Saudi Telecommunications Society, Riyadh. Retrieved 21/5/2015 from <http://www.citc.gov.sa/NR/rdonlyres/E494D1D1-E3DD-4DA9-A542D511FF5A6964/0/TelecomLiberalizationSTSSuwaiyel262007.pdf>
- Al-Somali, S. A., Gholami S., & Clegg, B. (2009). An investigation into the acceptance of online banking in Saudi Arabia. *Technovation*, 29, 130-141. <https://doi.org/10.1016/j.technovation.07.004>
- AlSoufi, A., & Ali, H. (2014). Customers' perception of m banking use in Kingdom of Bahrain: An empirical assessment of an extended TAM model. *International Journal of Managing Information Technology*, 6(1), 1-13.
- Alvesson, M., & Kärreman, D. (2007). Constructing mystery: Empirical matters in theory development. *Academy of Management Review*, 32(4), 1265-1281. <https://doi.org/10.5465/AMR.26586822>
- Baabdullah, A. M., & Williams, Y. K. (2013). Evaluating the unified theory of acceptance and use of technology (UTAUT2) in the Saudi Arabian context. In Y. K. Dwivedi, N. Koenig-Lewis, A. Pullen, E. Robbins & A. Simintiras (Eds.), *Nascent Connections, Proceedings of Swansea University Business School Postgraduate Research Conference* (pp.8-17). Swansea, UK: Business School, Swansea University. Retrieved from <https://www.swansea.ac.uk/som/files/FINAL%20PGR%20CONFERENCE%20PROCEEDINGS.pdf#page=21>
- Baker, E. W., Al-Gahtani, S. S., & Hubona, G. S. (2007). The effects of gender and age on new technology implementation in a developing country: Testing the theory of planned behavior (TPB). *Information Technology & People*, 20, 352-375. <https://doi.org/10.1108/09593840710839798>
- Bamoriya D., & Singh, P. (2012). Mobile banking in India: Barriers in use and service preferences. *Journal of Management*, 5(1), 1-7.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ.: Prentice-Hall.
- Bouwman, H., Carlsson, C., Walden, P., & Molina-Castillo, F. J. (2008). Trends in mobile services in Finland 2004-2006: From ringtones to mobile internet. *Info*, 10(2), 75-93. <https://doi.org/10.1108/14636690810862820>
- Castañeda, J. A., Muñoz-Leiva, F., & Luque, T. (2007). Web acceptance model (WAM): Moderating effects of user experience. *Information & Management*, 44(4): 384-396. <https://doi.org/10.1016/j.im.02.003>

- Chitungo, S. K., & Munongo, S. (2013). Extending the technology acceptance model to mobile banking use in rural Zimbabwe. *Journal of Business Administration and Education*, 3(1): 51. Retrieved from <http://www.infinitypress.info/index.php/jbae/article/download/100/90>
- Chung, N., & Kwon, S. (2009). The effects of customers, mobile experience and technical support on the intention to use mobile banking. *Cyberpsychology & Behavior*, 12(5), 539-543. <https://doi.org/10.1089/cpb.0014>
- Cruz, P., Barretto, N., Muñoz-Gallego, P., & Laukkanen, T. (2010). Mobile banking rollout in emerging markets: evidence from Brazil. *International Journal of Bank Marketing*, 28(5), 342-371. <https://doi.org/10.1108/02652321011064881>
- Daud, N. M., Kassim, M. E., Said, W. S., & Noor, M. M. (2011). Determining critical success factors of mobile banking adoption in Malaysia. *Australian Journal of Basic and Applied Sciences*, 5(9), 252-265.
- Dwivedi, Y., Rana, N., Chen, H., & Williams, M. (2011). A Meta-analysis of the Unified Theory of Acceptance and Use of Technology (UTAUT). In M. Nüttgens, A. Gadatsch, K. Kautz, I. Schirmer, & N. Blinn (Eds.) *Governance and sustainability in information systems: Managing the transfer and diffusion of IT* (pp.155-170). Berlin: Springer. [https://doi.org/10.1007/978-3-642-24148-2\\_10](https://doi.org/10.1007/978-3-642-24148-2_10)
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research reading*. Boston: Addison-Wesley.
- Ghalandari, K. (2012). The effect of performance expectancy, effort expectancy, social influence and facilitating conditions on acceptance of e-banking services in Iran: The moderating role of age and gender. *Middle East Journal of Scientific Research*, 12(6), 801-807.
- Gu, J. C., Lee S. C., & Suh, Y. H. (2009). Determinants of behavioral intention to mobile banking. *Expert Systems with Applications*, 36, 11605-11616. <https://doi.org/10.1016/j.eswa.03.024>
- Gupta, B., Dasgupta, S., & Gupta, A. (2008). Use of ICT in a government organization in a developing country: An empirical study. *Journal of Strategic Information Systems*, 17, 140-154. <https://doi.org/10.1016/j.jsis.12.004>
- Gupta, S., Kaur, M., & Kang, A. (2013). Role of mobile banking in today's era. *International Journal for Science and Emerging Technologies with Latest Trends*, 11(1), 5-9.
- Hair, J., Black, W., Babin, B., & Anderson, R. (2010). *Multivariate data analysis: A global perspective* (7th ed.). Upper Saddle River, NJ: Pearson Education Inc.
- Hanafizadeh, P., Behboudi, M., Koshksaray, A., & Tabar, M. (2014). Mobile-banking adoption by Iranian bank clients. *Telematics and Informatics*, 31(1), 62-78. <https://doi.org/10.1016/j.tele.11.001>
- Hassan, M. M., Rahman, A., Sharmin, M., & Rabbany, G. (2014). Factors influencing the use of mobile banking services in Bangladesh: An empirical analysis. *International Research Journal of Marketing*, 2(1), 9-20. <https://doi.org/10.12966/irjm.02.02.2014>
- Howcroft, B., Hamilton, R., & Hewer, P. (2002). Consumer attitude and the usage and adoption of home-based banking in the United Kingdom. *International Journal of Bank Marketing*, 20(3), 111-121. <https://doi.org/10.1108/02652320210424205>
- Im, I., Kim, Y., & Han, H. J. (2008). The effects of perceived risk and technology type on users' acceptance of technologies. *Information and Management*, 45(1), 1-9. <https://doi.org/10.1016/j.im.03.005>
- Isac, A. (2013). Use of mobile technology in banking services. *Annals of the University of Petrosani, Economics*, 13(2), 109-116.
- Jaradat, M. I., & Al Rababaa, M. S. (2013). Assessing key factor that influence on the acceptance of mobile commerce based on modified UTAUT. *International Journal of Business and Management*, 8(23), 102-112. <https://doi.org/10.5539/ijbm.v8n23p102>
- Juniper Research (2013). *Mobile banking handset and tablet market strategies 2013-2017*. Retrieved from [http://www.juniperresearch.com/reports/mobile\\_banking](http://www.juniperresearch.com/reports/mobile_banking)

## Examination of Customers' Mobile Phone Experience and Awareness of M-Banking

- Kabiry, N., & Forghani, M. H. (2013). Factors affecting Isfahanian mobile banking use based on the technology acceptance model. *International Journal of Academic Research in Business and Social Sciences*, 3(5), 611-623.
- Kijsanayotin, B., Pannarunothai, S., & Speedie, S. M. (2009). Factors influencing health information technology adoption in Thailand's community health centers: Applying the UTAUT model. *International Journal of Medical Informatics*, 78(6), 404-416. <https://doi.org/10.1016/j.ijmedinf.12.005>
- Kalinic, Z., & Marinkovic, V. (2016). Determinants of users' intention to adopt m-commerce: An empirical analysis. *Information Systems and e-Business Management*, 14(2), 367-387. <https://doi.org/10.1007/s10257-015-0287-2>
- Kazi, A. K., & Mannan, M. A. (2013). Factors affecting use of mobile banking in Pakistan: Empirical evidence. *International Journal of Research in Business and Social Science*, 2(3), 53-61. Retrieved from [https://mpr.ub.uni-muenchen.de/47922/1/MPRA\\_paper\\_47922.pdf](https://mpr.ub.uni-muenchen.de/47922/1/MPRA_paper_47922.pdf)
- Koenig-Lewis, N. Palmer, A. & Moll, A. (2010). Predicting young consumers' take up of mobile banking services. *The International Journal of Bank Marketing*, 28(5), 410-432. <https://doi.org/10.1108/02652321011064917>
- Koksal, M. H. (2016). The intentions of Lebanese consumers to adopt mobile banking. *International Journal of Bank Marketing*, 34(3), 327-346. <https://doi.org/10.1108/0025>
- KPMG. (2011). *Consumers and convergence 5: The converged lifestyle*. Retrieved from <http://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/consumers-and-convergence/Documents/the-converged-lifestyle.pdf>
- Kumar, R. G., Rejikumar, G., & Ravindran, D. S. (2012). An empirical study on service quality perceptions and continuance intention in mobile banking context in India. *Journal of Internet Banking and Commerce*, 17(1), 1-22.
- Laforet, S., & Li, X. (2005). Consumers' attitudes towards online and mobile banking in China. *International Journal of Bank Marketing*, 23, 362-380. <https://doi.org/10.1108/02652320510629250>
- Laukkanen, T. (2007). Internet vs. mobile banking: comparing customer value perceptions. *Business Process Management Journal*, 13(6), 788-797. <https://doi.org/10.1108/14637150710834550>
- Laukkanen, T., & Kiviniemi, V. (2010). The role of information in mobile banking resistance. *International Journal of Bank Marketing* 28(5), 372-388. <https://doi.org/10.1108/02652321011064890>
- Lee, C. P., Mattila, M., & Shim, J. P. (2007). An exploratory study of information systems resistance: The case of mobile banking systems in Korea and Finland. *AMCIS 2007 Proceedings*, Paper 448. Retrieved from <https://pdfs.semanticscholar.org/7fb3/b80b66a0388db487926b402f19fc024d577c.pdf>
- Lee, M. C. (2009). Understanding the behavioural intention to play online games: An extension of the theory of planned behavior. *Online Information Review*, 33(5), 849-872.
- Lee, E. J., Lee, J., & Eastwood, D. (2003). A two-step estimation of consumer use of technology-based service innovations. *Journal of Consumer Affairs*, 37(2), 256-282. <https://doi.org/10.1111/j.1745-6606.tb00453.x>
- Li, Y., & Zhang, C. (2010, August). Customer's adoption decision analysis of mobile banking service. *Proceedings of the 2010 International Conference on Management and Service Science (MASS)* (pp. 1-4). IEEE. <https://doi.org/10.1109/ICMSS.5576874>
- Littler, D., & Melanthiou, D. (2006). Consumer perceptions of risk and uncertainty and the implications for behaviour towards innovative retail services: The case of internet banking. *Journal of Retailing and Consumer Services*, 13(6), 431-443. <https://doi.org/10.1016/j.jretconser.02.006>
- Liu, G., Huang S. P., & Zhu, S. K. (2008, November). User acceptance of internet banking in an uncertain and risky environment. *International Conference on Risk Management & Engineering Management, Beijing, China*, 381-386. <https://doi.org/10.1109/ICRMEM.82>
- Lin, H. F. (2013). Determining the relative importance of mobile banking quality factors, *Computer Standards & Interfaces*, 35, 195-204. <https://doi.org/10.1016/j.csi.07.003>

- Luarn, P., & Lin, H. (2005). Toward an understanding of the behavioral intention to use mobile banking. *Computers in Human Behaviour*, 21(6), 873-891. <https://doi.org/10.1016/j.chb.03.003>
- Luo, X., Li, H., Zhang, J., & Shim, J. P. (2010). Examining multi-dimensional trust and multi-faceted risk in initial acceptance of emerging technologies: An empirical study of mobile banking services. *Decision Support Systems*, 49(2), 222-234. <https://doi.org/10.1016/j.dss.02.008>
- Malaquias, R. F., & Hwang, Y. (2016). An empirical study on trust in mobile banking: A developing country perspective. *Computers in Human Behavior*, 54, 453-461. <https://doi.org/10.1016/j.chb.08.039>
- Mallenius, S., Rossi, M., & Tuunainen, V. K. (2007). Factors affecting the adoption and use of mobile devices and services by elderly people: Results from a pilot study. *Proceedings of the 6th Annual Global Mobility Roundtable, Los Angeles, C.A.* Retrieved from <http://www.academia.edu/download/3437293/7535.pdf>
- Mnenwa, A. (2012). *Assessment of mobile banking business performance: A case of Dar Es Salaam City*. Unpublished doctoral dissertation, University of Dodoma, Tanzania. Retrieved from [http://www.academia.edu/download/44346263/ASSESSMENT\\_OF\\_MOBILE\\_BANKING\\_BUSSINESS\\_PERFORMANCE\\_Revised\\_by\\_Rubanza2.docx](http://www.academia.edu/download/44346263/ASSESSMENT_OF_MOBILE_BANKING_BUSSINESS_PERFORMANCE_Revised_by_Rubanza2.docx)
- Mohammadi, H. (2015). A study of mobile banking loyalty in Iran. *Computers in Human Behavior*, 44, 35-47 . <https://doi.org/10.1016/j.chb.11.015>
- Ndubisi, N. O., & Sinti, Q. (2006). Consumer attitudes, system's characteristics and Internet banking use in Malaysia. *Management Research News*, 29(1/2), 16-27. <https://doi.org/10.1108/01409170610645411>
- Osakwe, C. N., & Okeke, T. C. (2016). Facilitating mcommerce growth in Nigeria through mmoney usage: a preliminary analysis. *Interdisciplinary Journal of Information, Knowledge, and Management*, 11, 115-139. <https://doi.org/10.28945/3456>
- Palani A., & Yasodha, P. (2012). A study on customer perception towards mobile banking in Indian Overseas Bank Chennai. *International Journal of Marketing and Technology*, 2(4), 262-276.
- Pallant, J. (2007). *SPSS survival manual: A step by step guide to data analysis using for Windows* (3rd ed.) Maidenhead, Berkshire, England: McGraw Hill.
- Porteous, D. (2006). *The enabling environment for mobile banking in Africa*. Report commissioned by Department for International Development (DFID). Boston, MA: Bankable Frontier Associates. Retrieved from [https://www.microfinancegateway.org/sites/default/files/mfg-en-paper-the-enabling-environment-for-mobile-banking-in-africa-may-2006\\_0.pdf](https://www.microfinancegateway.org/sites/default/files/mfg-en-paper-the-enabling-environment-for-mobile-banking-in-africa-may-2006_0.pdf)
- Qasem, M. (2014). Developing a robust evaluation framework to evaluate security for online banking services. *International Journal of Advance Research in Computer Science and Management Studies*, 2(10), 253-265. Retrieved from <http://ijarcsms.com/docs/paper/volume2/issue10/V2110-0065.pdf>
- Rao, S., Li, S., & Troshani, I. (2007). A conceptual framework and propositions for the acceptance of mobile services. *Journal of Theoretical and Applied Electronic Research*, 2(2), 61-73.
- Ratten, V. (2011). Mobile banking innovations and entrepreneurial use decision. *International Journal of E-Entrepreneurship and Innovation*, 2(2), 27-38. <https://doi.org/10.4018/jeeci.2011040103>
- Riquelme, H. E., & Rios, R. E. (2010). The moderating effect of gender in the use of mobile banking. *International Journal of Bank Marketing*, 28(5), 328-341. <https://doi.org/10.1108/02652321011064872>
- Rodrigues, G., Sarabdeen, J., & Balasubramanian, S. (2016). Factors that influence consumer adoption of e-government services in the UAE: A UTAUT model perspective. *Journal of Internet Commerce*, 15(1), 18-39 . <https://doi.org/10.1080/15332861.1121460>
- Safeena, R., & Date, H. (2010). Customer perspectives on e-business value: Case study on internet banking. *Journal of Internet Banking and Commerce*, 15(1), 1-13.
- Safeena, R., & Date, H., Kammani A., & Hundewale, N. (2012). Technology use and Indian consumers: Study on mobile banking. *Int. J. Comput. Theory Eng*, 4(6), 1020-1024. <https://doi.org/10.7763/IJCTE.2012.V4.630>

## Examination of Customers' Mobile Phone Experience and Awareness of M-Banking

- Sanakulov, N., & Karjaluoto, H. (2015). Consumer adoption of mobile technologies: A literature review. *International Journal of Mobile Communications*, 13(3), 244-275. <https://doi.org/10.1504/IJMC.069120>
- Sathye, M. (1999). Adoption of internet banking by Australian consumers: An empirical investigation. *International Journal of Bank Marketing*, 17(7), 324-334. <https://doi.org/10.1108/02652329910305689>
- Saudi Arabia Communications and Information Technology Commission. (2014). *Annual Report*. Retrieved from <http://www.citc.gov.sa/English/Reportsandstudies/Reports/Documents/IT%20007%20E%20-%20IT%20Report%202014.pdf>
- Sekaran, U. (2009). *Research methods for business: A skill building approach* (2nd ed.). UK: Wiley-India.
- Shaikh, A., & Karjaluoto, H. (2015). Mobile banking adoption: A literature review. *Telematics and Informatics*, 32(1), 129-142. <https://doi.org/10.1016/j.tele.05.003>
- Shih, K. H., Hung, H. F., & Lin, B. (2010). Assessing user experiences and usage intentions of m-banking service. *International Journal of Mobile Communications*, 8(3), 257-277. <https://doi.org/10.1504/IJMC.032974>
- Siau, K., & Shen, Z. (2003). Mobile communications and mobile services. *International Journal of Mobile Communications*, 1(1/2), 3-14. <https://doi.org/10.1504/IJMC.002457>
- Spencer, A. J., Buhalis, D., & Moital, M. (2012). A hierarchical model of technology use for small owner-managed travel firms: An organizational decision-making and leadership perspective. *Tourism Management*, 33(5), 1195-1208. <https://doi.org/10.1016/j.tourman.11.011>
- Stofega, W., & Llamas, R. T. (2009). *Worldwide converged mobile device phone 2009-2013 forecast update: September 2009*. IDC Document No. 217209, IDC.
- Suganthi, B., Balachandher, G., & Balachandran, K. G. (2001). Internet banking patronage: An empirical investigation of Malaysia. *Journal of Internet Banking and Commerce*, 6(1). Retrieved from <http://www.icommercecentral.com/open-access/internet-banking-patronage-an-empirical-investigation-of-malaysia.pdf>
- Taylor, S., & Todd, P. (1995). Assessing IT usage: The role of prior experience. *MIS Quarterly*, 19(2), 561-570. <https://doi.org/10.2307/249633>
- To, W. M., & Lai, L. S. (2014). Mobile banking and payment in China. *IT Professional*, 16(3), 22-27. <https://doi.org/10.1109/MITP.35>
- Velmurugan, M. S., & Velmurugan, M. S. (2014). Consumers' awareness, perceived ease of use toward information technology adoption in 3G mobile phones' usages in India. *Asian Journal of Marketing*, 8(1), 1-23. <https://doi.org/10.3923/ajm.1.23>
- Venkatesh, V., & Morris, M. G. (2000). Why don't men ever stop to ask for directions? Gender, social influence, and their role in technology acceptance and usage behavior. *MIS Quarterly*, 24(1), 115-139. <https://doi.org/10.2307/3250981>
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425-478. <https://doi.org/10.2307/30036540>
- Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly*, 36(1), 157-178. Retrieved from [http://www.academia.edu/download/36422124/Venkatesh\\_utaut2.pdf](http://www.academia.edu/download/36422124/Venkatesh_utaut2.pdf)
- Wessels, L., & Drennan, J. (2010). An investigation of consumer acceptance of m-banking. *International Journal of Bank Marketing*, 28(7), 547-568. <https://doi.org/10.1108/02652321011085194>
- Williams, D. M., Rana, N., & Dwivedi, K. (2015). The unified theory of acceptance and use of technology (UTAUT): A literature review. *Journal of Enterprise Information Management*, 28(3), 443-88. <https://doi.org/10.1108/JEIM-09-0088>
- Wu, J. H., & Wang, S. C. (2005). What drives mobile commerce? An empirical evaluation of the revised technology acceptance model. *Information and Management*, 42(5), 719-729. <https://doi.org/10.1016/j.im.07.001>

- Yang, A. S. (2009). Exploring use difficulties in mobile banking services. *Canadian Journal of Administrative Sciences*, 26(2), 136-149. <https://doi.org/10.1002/cjas.102>
- Yu, C. S., & Chantatub, W. (2016). Consumers' resistance to using mobile banking: Evidence from Thailand and Taiwan. *International Journal of Electronic Commerce Studies*, 7(1), 21-38. <https://doi.org/10.7903/ijecs.1375>
- Zhang, L., Zhu, J., & Liu Q. (2012). A meta-analysis of mobile commerce and the moderating effect of culture. *Computers in Human Behavior*, 28(5), 1902-1911. <https://doi.org/10.1016/j.chb.05.008>
- Zhou, T., Lu Y., & Wang, B. (2010). Integrating TTF and UTAUT to explain mobile banking user adoption. *Computers in Human Behavior*, 26(4), 760-767. <https://doi.org/10.1016/j.chb.01.013>

**APPENDIX**

**Appendix A. Questionnaire items**

<b>Author(s)</b>	<b>Item(s)</b>	<b>Construct</b>
Al-Ghaith, et al. (2010)	<ol style="list-style-type: none"> <li>1. I have been using the mobile phone for a long time.</li> <li>2. I am using the mobile phone frequently.</li> <li>3. The variety of my mobile phone usage is wide-ranging.</li> <li>4. I am having an excellent knowledge about mobile phone.</li> <li>5. I am using the mobile phone very skillfully.</li> </ol>	Mobile Phone Experience
Al-Somali et al. (2009); Cruz et al. (2010); Laukkanen & (Kiviniemi (2010)	<ol style="list-style-type: none"> <li>1. I know about mobile banking services.</li> <li>2. I have received enough information about the benefits of using mobile banking services.</li> <li>3. I have received enough information of how to use mobile banking services.</li> <li>4. I have received information about the security system of mobile banking services from the bank.</li> </ol>	Awareness of Mobile Banking Services
Liu et al. (2008)	<ol style="list-style-type: none"> <li>1. I would find mobile banking services beneficial.</li> <li>2. Using mobile banking services would enable me to accomplish banking task more quickly.</li> <li>3. Using mobile banking services would increase my productivity in handling my banking tasks.</li> <li>4. Using mobile banking services would enhance my bank transaction quality.</li> <li>5. Using mobile banking services would increase my efficiency in conducting my banking tasks.</li> </ol>	Performance Expectancy
Al-Ghaith et al. (2010); Liu et al. (2008); Venkatesh et al. (2003)	<ol style="list-style-type: none"> <li>1. My interaction with mobile banking services would be understandable.</li> <li>2. It would be easy for me to become skillful at using mobile banking services.</li> <li>3. I would find mobile banking services easy to use.</li> <li>4. I would find mobile banking services to be flexible to interact with.</li> </ol>	Effort Expectancy
Riquelme and Rios, (2010); Wu and Wang (2005)	<ol style="list-style-type: none"> <li>1. I think using mobile banking services for monetary transactions would be risky.</li> <li>2. I think using mobile banking services has no assured privacy.</li> <li>3. I have worries about the satisfactory of the banking transactions performance via mobile phone.</li> <li>4. I think mobile banking services are more risky than other banking channels.</li> </ol>	Perceived Risk
Venkatesh et al. (2003); Alsheikh and Bojei (2014)	<ol style="list-style-type: none"> <li>1. I intend to use mobile banking services in the future.</li> <li>2. I would use mobile banking services for different kinds of banking transactions.</li> <li>3. I believe that adopting mobile banking services is worthy for me.</li> </ol>	Behavioral Intention to Use



Appendix B. Rotated component matrix

Constructs	Items	Component					
		1	2	3	4	5	6
Mobile Phone Experience	1					.846	
	2					.863	
	3					.623	
	4						.667
	5						.677
Awareness of Mobile Banking Services	1			.445			.403
	2			.823			
	3			.879			
	4			.855			
Performance Expectancy	1	.750					
	2	.752					
	3	.811					
	4	.758					
	5	.777					
Effort Expectancy	1		.752				
	2		.770				
	3		.780				
	4		.758				
Perceived Risk	1				.801		
	2				.848		
	3				.788		
	4				.820		
Behavioral Intention to Use	1						.681
	2						.692
	3						.685

## BIOGRAPHY

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