# Exploring the Potential Factors Influencing the Adoption of M-Government Services in Saudi Arabia: A Qualitative Analysis (Work in progress)

**Abstract**

In Saudi Arabia, Mobile government (m-government) is in its infancy. This study aims to explore potential factors influencing adoption of m-government services in Saudi Arabia to improve future implementation. The review of the relevant literature revealed a lack of research regarding the factors that may potentially influence the adoption m-government services in Saudi Arabia by using TAM model based on the perspective of experts in Yesser. To examine relationships between external factors and behavioural intention to use (BIU) in the TAM model, a qualitative study was conducted using semi-structured interviews with five experts from Yesser. Analysis demonstrated that the factors of trustworthiness, usage experience, awareness and security might influence the adoption of m-government services in Saudi Arabia. The results of the qualitative study also demonstrated that enjoyment does not influence the adoption of m-government services in Saudi Arabia. These findings may help decision makers in Saudi government to improve future implementation of m-government services.

**Keywords:** M-government, E-government, Saudi Arabia, IS

## 1. Introduction

Many countries are now seeking to adopt new technology such as electronic government (e-government) or m-government to improve government services and delivery. Some countries have succeeded in implementation, and others have failed. For example, in 2005 Saudi Arabia established the e-government project, Yesser. The goal of Yesser implementation was that by 2010, every Saudi Arabia, citizen would be able to freely access and utilize a specific set of government services online, while maintaining personal data security (O Alfarraj, 2013). However, according to Alshehri, Drew, and Alfarraj (2012), challenges such as resistance to change have prevented the complete adoption of e-government initiatives in Saudi Arabia. Although there has been progress in e-government implementation, generally, most e-government initiatives have experienced schedule delays and incomplete implementation (O. Alfarraj & Alhussain, 2013; O Alfarraj, Alhussain, & Abugabah, 2013). M-government is a subset of and complement to e-government (Althunibat, Alrawashdeh, & Muhairat, 2014; El Kiki & Lawrence, 2006; Kumar & Sinha, 2007; Mengistu, Zo, & Rho, 2009; Misra, 2009; Östberg, 2003; Sheng & Trimi, 2008). M-government applications currently exist in several countries to support the efficient provision of services. Most existing m-government applications involve weather updates, emergency assistance, traffic updates, field inspections, tracking systems for stolen vehicles, or notifications for bills and taxes (Alhussain, 2012). Although Saudi Arabia has already adopted some applications, Saudi m-government services are still in its infancy. The aim of this study is to explore potential factors that influencing the adoption of m-government services in Saudi Arabia. This information is pivotal for government decision makers to help them in future implementation by examining the relationships between external factors and BIU in TAM model. This study will address existing problem which is to date, there have been insufficient empirical studies to explore the potential factors that influence on adopt of m-government services in Saudi Arabia. Moreover, it aims to examine relationships between external factors and behavioural intention to use (BIU) in TAM model, and to explore new factors in this matter based on experts perspective in Yesser by conducting qualitative research.

This study aims to answer this research question:

What are potential factors influencing on adoption of m-government services in Saudi Arabia?

## 2. Literature review.

### *2.1 E-government in Saudi Arabia:*

The e-government project (Yesser) was established in 2005 in Saudi Arabia, with the hope of potential economic benefits. Yesser is under the control of three ministries: the Ministry of Communication and Information Technology (IT), the Ministry of Finance and Communication and the Communication and IT Commission (Program, 2015). Yesser is considered a controller and a reference for the design and implementation for all other e-government initiatives in Saudi Arabia. The purpose of implementing e-government initiatives was so that, by 2010, every citizen in Saudi Arabia could enjoy and utilize a set of government services online, without effort, anywhere and at any time, while maintaining security over personal data(O Alfarraj, 2013). According to Alshehri et al. (2012), in Saudi Arabia, e-government initiatives have not been completely adopted yet because

there are challenges and obstacles preventing their adoption.O. Alfarraj and Alhussain (2013) and O Alfarraj et al. (2013) emphasize that there is progress in implementing e-government initiatives, but that, generally, e-government initiatives have not been implemented completely, and most have experienced delays in their schedules because there are many challenges such as resistance to change.

*2.2 Definition of m-government:*

Internet issues and a lack of penetration may cause delays to the provision of government services to users. Consequently, researchers have suggested a move to m-government. M-government is more important in the current technological environment because it allows services to be adopted using tablets, handheld terminals, short message services (SMSs), personal digital assistants (PDAs), and mobile and cellular telephones (Al-Hadidi, 2010). M-government is defined as the use of wireless technology (i.e., mobile communication) to provide government services to users. When using wireless technology, there is easy access to services, guaranteed mobility for users, and real-time access to information. These characteristics provide advantages to the government, which can provide services quickly (Althunibat et al., 2014) . M-government is considered a complement to and a subset of e-government. M-government is connected to users through means such as WAP, MMS, SMS, the worldwide web (WWW), and satellite. M-government is the method by which the government seeks to gain the benefits of mobile technology and provide government services to users through mobile services (Althunibat et al., 2014). Kushchu (2007) Noted that m-government uses all types of wireless technology and communication, including applications, services and devices, to offer advantages related to all parts of e-government, such as businesses, all government sectors and citizens. El Kiki and Lawrence (2006) Stated that m-government must be viewed as a tool for government, rather than a new type of government in itself. In addition, some researchers (Kumar & Sinha, 2007; Misra, 2009; Sheng & Trimi, 2008) firmly believe that m-government is a subset of and complement to e-government. Moreover, Alsenaidy and Ahmad (2012) confirmed that m-government can achieve the goals of e-government via exploiting the high rates of usage of mobile phones among citizens. Al-Hadidi (2010) Defined m-government as follows:

a) A Future Government that provides for citizens, companies and government by delivering personalized government services through wireless networks, b) A Multi-channel Government that overcomes current limitations of e-Government and supports mobility and accessibility and, c) Wired-Wireless Convergence Network that can access government service anytime and anywhere. (p.56)

Similarly, Moon (2004) defined m-government as follows:

Broadly, m-government is defined as government's efforts to provide information and services to public employees, citizens, businesses, and non-profit organizations through wireless communication networks and mobile devices such as pagers, PDAs, cellular phones, and their supporting systems. (p.9)

Al-Hadidi (2010) claimed that, "M-government is a natural and inevitable extension of e-government" (p.57). On the other hand, Snellen and Thaens (2008) defined m-government as the application of mobile devices, such as handheld PCs, PDAs and mobile telephones citizens in the exchanges among officials, organizations, individuals and public administration. To conclude, m-government is a subset of and complement to e-government, and it uses such mobile devices and mobile technologies as PDAs, phones, etc.

M-government, like e-government, has four types:

1- M-government-to-citizen (mG2C): connection between government and citizens.
2- M-government-to-business (mG2B): connection between government and business.
3- M-government-to-employee (mG2E): connection between a government and its employees.
4- M-government-to-government (mG2G): connection between a government and its sectors (Mengistu et al., 2009).

Ntaliani, Costopoulou, and Karetsos (2008) Noted that, today, most interactions are mG2C. Therefore, this research will focus on mG2C in order to explore the potential factors that influence the adoption of m-government services in Saudi Arabia. Possible factors will be determined through interaction with experts currently working in the Yesser program, due to their insight and knowledge of m-government adoption.

*2.3 Relationship between e-government and m-government:*

Al-Hadidi and Rezgui (2010) asserted that m-government is part of e-government, but that it is another way to offer government services and information to citizens. In addition, Nava and Dávila (2005) and Assar (2015) claimed that m-government and e-government are the same concept and that there is no difference between them

except that m-government is an advanced type of e-government. In addition, some researchers have asserted that traditional e-government benefits are still important for supporting and transforming m-government, since e-government is an important basic component of m-government (Abanumy & Mayhew, 2005; Antovski & Gusev, 2005; Kim, Yoon, Park, & Han, 2004; Scholl, 2005). Jahanshahi, Khaksar, Yaghoobi, and Nawaser (2011) Noted that some researchers believe that m-government is like e-government, in that it is an independent tool used by governments to fulfil basic objectives. On other hand, some researchers have claimed that m-government assists in providing government services for the public and that it is part of e-government. Cilingir and Kushchu (2004) Noted that there is a dependency between m-government and e-government; that is, m-government cannot be implemented without e-government's infrastructure. Therefore, m-government must be inserted into the design of e-government. Similarly, Alomari, Elrehail, and Al Shibly (2013)asserted that m-government is a key important factor in the adoption and success of e-government services because m-government is popular, easy to use, provides services through sophisticated methods, and provides all the advantages of an m-government, as discussed before. Thus, the research recommend that the Saudi Arabian government employ an m-government format, to quickly implement e-government services.

On other hand, Al-Hadidi and Rezgui (2010) suggested that there is a significant difference between e-government and m-government regarding time of delivery and access, since e-government uses wired networks to offer services to citizens, businesses and internal government operations, while m-government uses wireless technology and mobility support.

*2.4 M-government services and applications in Saudi Arabia:*

According to Alhussain (2012), m-government applications currently exist in several countries, to support the efficient provision of services. Most of the m-government applications involve weather updates, emergency assistance, traffic updates, field inspections, tracking systems for stolen vehicles and notification for bills and taxes. Ahmad, Ansari, Akhtar, and Parveen (2014) Stated that in Saudi Arabia, mobile phone use has seen massive growth among citizens. Therefore, some services that are available from the Saudi government such as Health Mobile, tracking of Higher Education Information, Riyadh and Madinah Education, Appointments and Document Tracking and Employee Inquiry. In Saudi Arabia, the adoption of m-government is in its infancy. It has been asserted that m-government applications are in the first stage (Alhussain, 2012; Alsenaidy & Ahmad, 2012) although some applications have already been released.

*2.5 Perceived trustworthiness:*

According to (Gefen & Straub, 2003; Palvia, 2009), trust is an important variable that influences potential buyer's willingness to adopt new technology. Wei, Marthandan, Y, Ooi, and Arumugam (2009) Found that there is a strong positive relationship between trust and m-commerce adoption. This results are supported by the findings of Alomari, Woods, and Sandhu (2009) asserted that there is a significant positive relationship between trust and people's intentions to use e-government initiatives. According to Alsaghier, Ford, Nguyen, and Hexel (2009), many studies have demonstrated that trust is a critical factor for social and economic interactions. It has been pointed out that a lack of trust is one of the main challenges and barriers in the adoption of e-government initiatives (Bélanger & Carter, 2008; Horst, Kuttschreuter, & Gutteling, 2007). In addition, Warkentin, Gefen, Pavlou, and Rose (2002) proposed that government should focus more on trust and on seeking to build trust to encourage citizens to adopt online services. Furthermore, Almarabeh and AbuAli (2010) recommended that the government should start by focusing on short-term results to increase users' trust—and then maximize the project once trust has been achieved. This is because many authors have agreed that trust is an important factor in the adoption of e-government initiatives (Abunadi, 2012; Alomari et al., 2009; Alsaghier et al., 2009; Bélanger & Carter, 2008; Horst et al., 2007; Lee, Kim, & Ahn, 2011; Warkentin et al., 2002; West, 2008). H. Al-Busaidi (2012) Confirmed that many users hesitation to use and adopt m-government initiatives due to a lack of trust in technology and that this negatively influences users' attitudes and intentions.

*2.6 Usage experience:*

Alharbi and Drew (2014) defined usage experience as "individual involvement in or exposure to a particular system and the accumulative skills the user gains by using the system" (p. 146). Venkatesh and Davis (2000) Identified usage experience as a crucial factor in the adoption of new technology. Wangpipatwong, Chutimaskul, and Papasratorn (2008) claimed that continued use of e-government services provides certain advantages for users, and they pointed out that real success for IS systems depends on continued, not temporary, use. Alshehri and Drew (2010) and Al-Tourki, El-Sofany, Al-Sadoon, and Al-Howimel (2012) argued that one of reasons to delay the adoption of e-government initiatives successfully is a low level of use of these initiatives, as a consequence of no policies, regulations or laws regarding the use of e-government services. In addition, Corbitt,

Thanasankit, and Yi (2003) and Salam, Iyer, Palvia, and Singh (2005) pointed out that, if users have more experience in the web, they may be more likely to buy online. Harris, Rettie, and Cheung (2005)Compared Hong Kong and the UK with regard to the adoption of m-commerce and found that the rate of adoption of m-commerce in Hong Kong is lower than that in the UK because the usage experience in Hong Kong is lower than that in the UK. It has been mentioned that increased usage of mobile business and electronic business will increase transactions and could increase profit. Users accept and are comfortable with new technologies when they have the experience to use this technology (Wu & Wang, 2005). Venkatesh, Ramesh, and Massey (2003) Suggested that a condition for the success of m-commerce and e-commerce is users' experiences—that is, whether users are satisfied and whether these services satisfy their needs. Lin (2011) stated that the length of time of user experience may be a critical factor in the continued intention to use e-learning, suggesting that user expertise has a positive influence on user loyalty and attitudes.

*2.7 Enjoyment:*

It has been discussed that enjoyment is a crucial factor in the adoption of new technology (Davis, Bagozzi, & Warshaw, 1992; Kulviwat et al., 2007; Sun & Zhang, 2006). In addition, Randolph j and Woodside (2005) confirmed that consumers are more likely to accept advertising through mobile devices when the advertising is enjoyable and fun. Similarly, Anckar and D'incau (2002) pointed out that perceived enjoyment is one of the key factors to inspire and encourage users to use mobile services. Sun and Zhang (2006) Claimed that enjoyment encourages users to underestimate the perceived difficulty related to using technology, thus leading to the adoption of new technology. It has been identified that there is a positive relationship between perceived enjoyment and attitudes towards the adoption of new technology (Suki & Suki, 2011).In addition, Teo, Lim, and Lai (1999) found that perceived enjoyment has a positive impact on Internet usage in Singapore. Furthermore, it has been asserted that perceived enjoyment has a positive effect on online shopping intentions (Ramayah & Ignatius, 2005). Igbaria, Iivari, and Maragahh (1995) Claimed that enjoyment is one of the most important motivators to accept or reject new technologies. Fang, Chan, Brzezinski, and Xu (2005) Confirmed that perceived enjoyment is considered to be a positive factor in users' attitudes towards the adoption of mobile services and assists in the rapid adoption of mobile services.

*2.8 Awareness*

According to (Alomari, 2011), a lack of awareness is one factor that prevented Jordanian citizens from adopting e-government. Therefore, the author suggested that governments should raise awareness of new technological implementations in order to encourage public adoption (Alomari, 2011). Similarly, Al-Hadidi (2010) asserted that users' awareness of technology is a main factor in its adoption. Moreover, Alotaibi, Sandhu, and Houghton (2014) asserted that awareness should be raised in users because it is considered a vital factor in the acceptance of new electronic systems. A previous study by (Alomari, Woods, & Sandhu, 2012) found that three factors played crucial roles in the acceptance of new systems: awareness of the Internet, workers with information technology skills and understanding the Internet. Previous studies (Abunadi, 2012; Al-Tourki et al., 2012) recommended that media such as newspapers, social networks such as Facebook and television advertisements should be used to raise the awareness of citizens. O Alfarraj (2013) also noted that in developing countries, awareness is an essential factor in the adoption of information systems projects. It has been recommended that awareness programs should focus on the managers in organizations and agencies rather than staff because they affect the staff's attitudes, and they have an important role in the acceptance of new technology (Alotaibi et al., 2014).

*2.9 Security:*

Security is an essential factor in the acceptance of new technology. When users feel that government websites are unsafe, they will not use these sites because they want to protect their personal data (Teo, Srivastava, & Jiang, 2008). It has been asserted that privacy and security are the most important problems that challenge the adoption of m-government (Chang & Kannan, 2003). Alotaibi et al. (2014) Found that privacy and security are very important factors in using government services. Similarly, a previous study found that security is a large barrier to the adoption of mobile services (Fang et al., 2005). H. Al-Busaidi (2012) recommended that to adopt m-government services, the government must assure users that their personal data will be protected and will not be sold to others.

*2.10 Theoretical background of information technology adoption*

2.10.1 Technology Acceptance Model (TAM):

According to (Carter & Bélanger, 2005) in relation to the technology acceptance model (TAM): “TAM is based on the theory of reasoned action, which states that beliefs influence intentions, and intentions influence one’s actions” (p. 8). As shown in Figure 1, The TAM was used by (Davis, 1986) to measure technology acceptance by users. In addition, some studies (K. Al-Busaidi & Al-Shihi, 2010; Alharbi & Drew, 2014; Ma & Liu, 2004; Moon & Kim, 2001) have pointed out that the TAM is widely used in IS to measure the acceptance of new technologies.

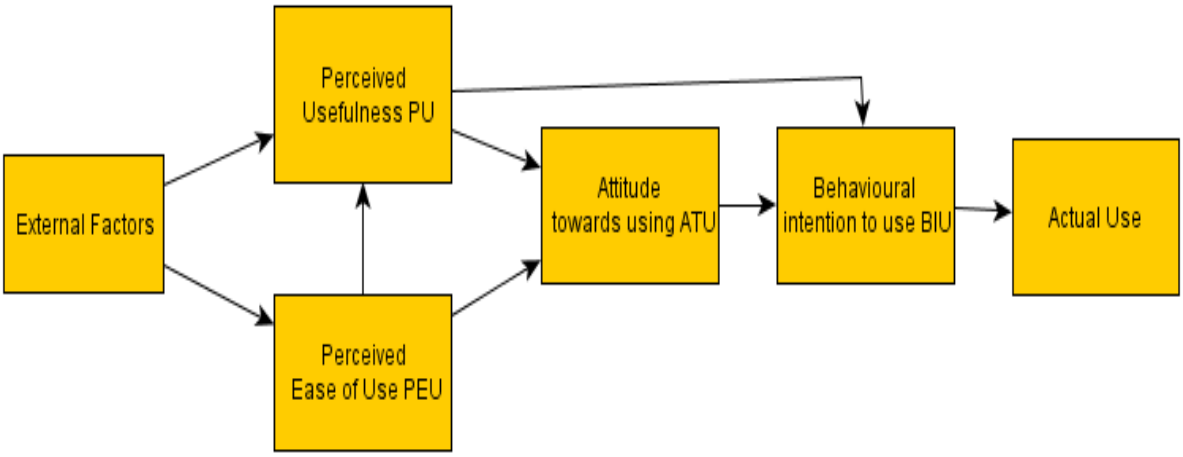



Figure 1. The Technology Acceptance Model (TAM) (Davis, 1986).

2.10.2 Research model and hypotheses:

Based on this study and its aims, the research model is presented in figure 2. It consists of three external factors, which derived from literature review and the TAM variables.

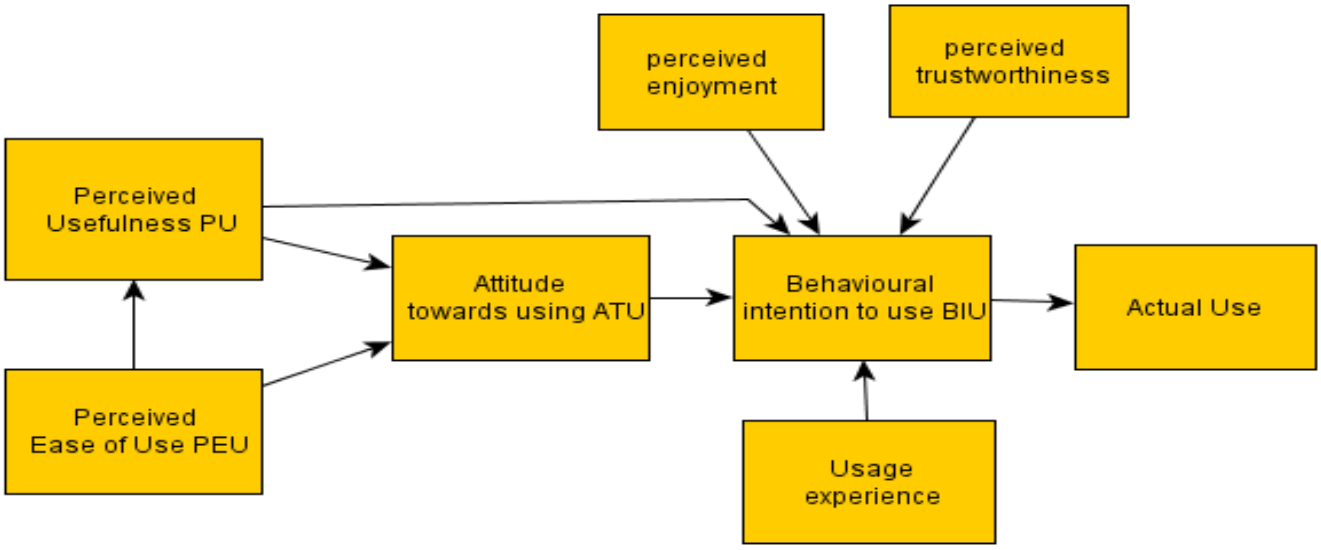



Figure 2. Research model for this study and hypotheses

Hypotheses for external factors:

This research hypothesised three relationships between external factors and behavioural intention to use (BIU) m-government services:

H1: perceived trustworthiness will have a positive influence on behavioural intention to use (BIU) m-government services.

H2: enjoyment will have a positive influence on behavioural intention to use (BIU) m-government services.

H3: usage experience will have a positive influence on behavioural intention to use (BIU) m-government services.

In this study, a TAM model was employed to identify the potential gaps in the literature regarding m-government adoption in Saudi Arabia. In addition, it was employed to explore the potential factors that influence m-government adoption in Saudi Arabia, by analysing qualitatively expert experience in the Yesser program. At the end of this study, TAM model will be refined and then will be quantitatively examined and measured in next study.

## 3. Research Methodology:

### *3.1 Qualitative methods*

In general, qualitative methods focus on an insider's perspective to explore phenomena and understand the meaning of the phenomena from individual perspectives (Hennink, Hutter, & Bailey, 2010; Murray, 1998), enabling researchers to obtain a richer understanding of phenomenon (Chadwick, Gill, Stewart, & Treasure, 2008). Most qualitative studies focus on human behaviour and examine cultural factors that influence human behaviour and beliefs (Green, 1999). In this study, qualitative methods were employed to explore potential factors that influence m-government adoption in Saudi Arabia. In particular, from the point of view of experts who were involved in the implementation of e-government and m-government (Yesser) by examining relationships between external factors with BIU in a TAM model. As qualitative research focuses on descriptive data, not numbers(Punch, 2005), it is especially useful when exploring questions of 'why' and 'what' (Hennink et al., 2010; Khan, 2014; Murray, 1998). Furthermore, in qualitative research, the researcher is the primary instrument of data collection.

### *3.2 Semi-structured interviews*

The researcher conducted semi-structured interviews with Yesser experts. There are three types of interviews: (1) unstructured interviews, (2) structured interviews, and (3) semi-structured interviews (Jupp, 2006). According to (Myers & Newman, 2007), the semi-structured interview is popular in information system (IS) studies, because it provides opportunities to explore a topic in more depth, using both prepared questions and improvisation. This style of interview allows researchers to ask participants about their personal experiences and opinions on particular points (Rabionet, 2011). These interviews often afford greater reliability, validity, and ease of implementation (Copeland et al., 1976). This study employed semi-structured interviews for two reasons. Firstly, given the complex phenomenon under investigation, it is appropriate to explore the participants' opinions and perceptions and obtain more details. Secondly, the semi-structured nature of the interview eliminates the need to have the same interview schedule for each participant, allowing the researcher to explore relevant avenues as they arise (Louise & While, 1994). Furthermore, semi-structured questions give participants more autonomy and allows them to speak freely (Witzel, 2000).When conducting the interviews in this study, the following practices were implemented. Firstly, the researcher began by introducing the general topic and aims of the study to inform participants about pertinent details. The researcher then asked general questions about e-government and m-government, eventually narrowing in on the adoption of m-government services, especially the potential factors that influence m-government adoption by ask participants to examine relationships external factors with BIU in TAM model and to explore new factors. The researcher used three instruments when conducting the interviews: note-taking, recordings, and interviewing guidelines. Combining notes with recordings is very important in developing an understanding of a topic. Likewise, interviewing guidelines provide flexibility in an interview while helping the

researcher remember to ask about important things to fulfil the purpose of the study.

*3.3 Unit of analysis and sampling*

In this study, the interview questions were open-ended questions designed to explore the participants' perspective of potential factors that influence m-government adoption. To achieve the study's purposes, the researcher conducted five semi-structured interviews from the point of view of the experts who were involve in the implementation of e-government and m-government (Yesser) in Saudi Arabia. This sample size was chosen as the literature suggests that a sample size of five to 50 is sufficient for a statistically significant qualitative study (Dworkin, 2012). Interviews were conducted as face-to-face interviews in Yesser. The experts' position in Yesser presented in Table1.

Table 1 Experts' position in Yesser

| ***Position in Yesser*** |
|---|
| Specialist at performance indicators measure. |
| Business requirement and architecture manager. |
| Product manager for m-government. |
| Solution architecture specialist. |
| Initiatives manger. |

Purposive sampling was utilised to select participants. Researchers can use purposive sampling to obtain rich data about an issue (Alsaghier, 2010). To explore experts' perspectives of the potential factors that influence m-government adoption, participants who are involved in Yesser project were selected. The expected length of each interview was approximately 40 minutes. As most participants were native Arabic speakers, the interview questions were translated into Arabic, and the final version were sent to expert translators to avoid errors and ensure clarity. After collecting data from the participants, responses were translated into English.

## 4. Data Analysis

*4.1 Analysis of Qualitative Data:*

A thematic analysis was conducted to analyse qualitative data from expert opinions in Yesser. According to (Thorne, 2000, p. 69), a thematic analysis is defined as the "method that depends on constant comparative analysis processes to develop ways of understanding human phenomena within the context in which they are experienced". The researcher conducted a thematic analysis as it is typically used to analyse the qualitative data in primary qualitative research (Creswell, 2008; Thomas & Harden, 2008). Braun and Clarke (2006) similarly claimed that thematic analyses have been broadly conducted in qualitative studies.

According to Braun and Clarke (2006), there are six phases of thematic analysis:

1. Familiarizing with data:

Writing, reading, and re-reading the data and writing notes about initial ideas.

2. Generating initial codes:

This phase seeks to create initial codes. These are considered the most basic of the raw data, and they are of interest to the analyst.

3. Searching for themes:

This phase focuses on the analysis of themes rather than codes. In brief, this involves sorting the different codes into potential themes and collating all the relevant coded data extracts within the identified themes.

4. Reviewing themes:

In this phase, themes are checked in relation to coded extracts and the full data set.

5. Defining and naming themes:

Themes are named and defined clearly regarding what your themes are and what they are not.

6. Producing the report:

Data analysis and the results are reported (Braun & Clarke, 2006).

*4.2 Themes and subthemes in the results of data analysis:*

Labelled potential factors and Labelled sub-potential factors are presented in Table 2.

Table 2 labelled potential factors and labelled sub-potential factors identified in the data analysis

| ***labelled sub-potential factors*** | ***labelled potential factors*** |
|---|---|
| M-government is the best option. | M-government adoption in Saudi Arabia |
| Some services have been implemented through mobile devices. | |
| Trust the app and its work.<br>Trust in provider. | Perceived trustworthiness |
| Usage experience affect the adoption of m-government. | Usage experience |
| Enjoyment in the adoption of m-government | Enjoyment |
| Service integration<br>Trust the app and its work.<br>Awareness of governmental sectors and citizens<br>Privacy in work apps | Awareness<br>Security |

The first potential factor concerns the adoption of m-government in Saudi Arabia. One participant stated, "*Based on our situation with governmental organizations, definitely m-government is the best option*". The product manager for m-government in Yesser asserted, "*M-government is not optional; it is very necessary. M-government is compulsory development these days. M-government is considered a compulsory development these days, and organizations must follow these developments to provide their services through these developments*". Another participant noted," *absolutely yes, m-government is better while there are no any security reasons*". In the same line, initiatives manger in Yesser confirmed, "*We are concerned about that because we are convinced that m-government is best option for implementing government services*". However, one participant stated, "*There are difficulties in transferring some services to m-government*". Regarding the provision of services through mobile devices, one participant confirmed, "*There are more than 30 applications from governmental organizations. Every three months there are about two to three applications released from governmental organizations such as Abshar*".Another participant claimed "*Yesser assists organizations to provide their services. For example, the apps that are provided by government organizations such as Safeer*". However, when the solution architecture specialist was asked about the services provided through mobile devices, he responded, "*Yes, a few, such as Absher and Safeer*".

Another potential factor that emerged from the data analysis was perceived trustworthiness. One participant noted, "*I think in Saudi Arabia, citizens trust apps that have been released from a trusted source like governmental organizations. So if trust increases, that leads to increases in the adoption of m-government services. So, trust is a crucial factor in the adoption of m-government*". Similarly, a product manager for the m-government in Yesser mentioned that "*simple mistakes that happened by organizations when they create app and when they want to upload it on store is uploaded under the developer's name. Citizens will not use this app because they do not know if this app is for a governmental organization or not. So simple mistakes destroyed trust*". This participant also confirmed that trust is an important factor in the adoption of m-government, saying, "*Trust has an influence on the adoption of m-government. Also, citizens' trust in the source of the app and the app's reliability will affect the adoption of m-government*". Moreover, another participant asserted, "*Absolutely, Trust has a positive effect on the adoption of m-government*". He also talked about another aspect of trust: "*Sometimes the user thinks this service does not work on a mobile, and that leads to abandoning the app*". However, the initiatives manger in Yesser said, "*We care about and are aware of that. If there is a lack of trust, the app will not be used*". A specialist in performance indicator measurement also asserted that trust is important in the adoption of m-government, saying, "*I strongly support including this factor. This factor is very important*".

Another potential factor is usage experience. Regarding this potential factor, the specialist in performance indicator measurement said, "*I consider usage experience as an important factor in the adoption of m-government*". Another participant responded, "*If users are having an effective experience and they get use to*

*the apps, it will lead them to adopting these apps*". In addition, the product manager of the m-government in Yesser asserted that usage experience is an important factor in the adoption of m-government, saying, "*Absolutely. Usage experience is a crucial factor in the adoption of m-government in Saudi Arabia and in other countries*". On other hand, another participant claimed that usage experience does not greatly influence the adoption of m-government, saying, "*It does not have a big influence because when the user finds a service, he will use it even if the experience is bad. I think existing services are more important than experience*". However, he then confirmed, "*usage experience has effects on the adoption of m-government*". The initiatives manager in Yesser asserted, "*We care about and are aware of that, and we are seeking to provide apps that are easy to use and provide a better user experience*".

Regarding the potential factor of enjoyment, one participant claimed, "*If the user enjoys using services that means the user is happy and satisfied with these services and that affects the adoption of m-government. So enjoyment is important factor*". Similarly, another participant stated, "*enjoyment is a crucial factor in the adoption of m-government*".In contrast, the business requirement and architecture manager noted the following about enjoyment: "*I think it does not have a role in this matter because I think a citizen uses apps from governmental organizations for a specific objective, not for enjoyment. I do not think enjoyment will assist and encourage citizens to use apps because there are many other entertaining apps in mobile phones. Therefore, I think citizens use governmental apps for specific goals. To conclude, enjoyment does not affect the adoption of m-government*". Another participant responded, "*I think it does not have an effect on the adoption of m-government because mobile phones have many other entertaining apps*". Similarly, the product manager for m-government asserted, "*it does not have an influence on the adoption of m-government. For example, I downloaded Abshar not for enjoyment but to use services. These days in Saudi Arabia, enjoyment is not considered a factor in the adoption of m-government*".

Two other potential factors that may influence the adoption of m-government are awareness and security. One participant said, "*We talked about trust and usage experience, but there are other factors that should be prioritized. One is awareness about government services. Awareness is an important factor where raising awareness among users leads to increased usage and that leads to increased trust in services*". This participant also noted, "*Privacy is an important factor, and it needs more attention from organizations that provide services*". Another participant claimed that some potential factors that may influence the adoption of m-government. The first factor concerned the "*integration between governmental organizations. I think creating integration of services between organizations will make citizens more relaxed, which will lead them to adopt apps. I think integration has a big influence on the adoption of m-government*". The second factor concerned the "*errors and flaws in apps, including design issues, usability of the app and so on, which may affect citizens' decision to adopt m-government*". The third one was security. This participant said, "*Privacy is very important in this matter. When the citizen knows that some other persons will read his personal data in apps, that will leads to abandon these apps. In other words, if privacy increases in apps, it will lead to citizens adopting them, and the opposite is correct*". The last one indicated by the participant was awareness, particularly "*marketing (advertising for apps). If the app does not have a good advertisement, it will not be adopted successfully. In other words, awareness has a positive effect on the adoption of apps*". The product manager for m-government in Yesser also commented on awareness, saying, "*I think the most important factor in this matter is awareness, especially in governmental sectors. Awareness has a big influence on the adoption of m-government. Therefore, awareness is an important factor in citizens adopting m-government*". Another participant asserted the importance of security, saying, "*I think privacy is very important for users, especially in our culture. So I think privacy is vital factor in m-government*". The initiatives manager in Yesser concluded, "*I think there are two main important factors in the adoption of m-government, which are awareness and privacy*". In the next section, the potential factors will be discussed in detail, particularly their reflection in the findings of the literature review.

## 5. Discussion

### *5.1 M-government adoption in Saudi Arabia*

In Saudi Arabia, the use of the mobile phone has increased rapidly. According to the latest of report provided by Communications and Information Technology Commission in Saudi Arabia reported that the penetration of

mobile phones reaching 170% in 2014 (CITC, 2014). Similarly, the initiatives manager in Yesser cited the latest reports, saying, "*There are reports found that percentage of using mobile phone in the Kingdom of Saudi Arabia is almost 190%. So m-government is very important to adopt as a main channel to provide services*". The product manager for m-government in Yesser asserted, "*m-government is not optional, it is very necessary. M-government is a compulsory development these days. M-government is considered a compulsory development these days, and organizations must follow these developments to provide their services through these developments*". In addition, all other participants confirmed that m-government is the best option for implementing governmental services. In Saudi Arabia, the adoption of m-government is in its infancy. It has been asserted that m-government applications are in the first stage (Alhussain, 2012; Alsenaidy & Ahmad, 2012) although some applications have already been released. According to (Alsenaidy & Ahmad, 2012), some governmental services have been provided through mobile devices by the Saudi Arabian government. With regard to this point, one participant confirmed, "*There are more than 30 applications from governmental organizations. Every three months, about two to three applications are released from governmental organizations such as Abshar*". When the solution architecture specialist was asked about the services provided through mobile devices, he responded, "*Yes, a few such as Absher are Safeer*".

*5.2 Perceived trustworthiness*

Another important potential factor that emerged from the data analysis is perceived trustworthiness. According to (Gefen & Straub, 2003; Palvia, 2009), trust is an important variable as it has an effect on user' intentions to adopt new technology. Some previous studies asserted that trust is an important factor in the adoption of new technology. For example, Wei et al. (2009) found a strong positive relationship between trust and the adoption of m-commerce. Similarly, Alomari et al. (2009)found a significant positive relationship between trust and people's intentions to use e-government initiatives. One participant in the present study asserted, "*Absolutely .Trust has a positive effect on the adoption of m-government*". Another participant also noted, "*I think in Saudi Arabia citizens trust apps that have been released from a trusted source like a governmental organization. So if trust increases that leads to increases in the adoption of m-government services. So trust is a crucial factor in the adoption of m-government"*. H. Al-Busaidi (2012) Confirmed that many users hesitate to use and adopt m-government initiatives because they do not trust technology, which negatively affects users' attitudes and intentions. However, if the user trusts the app, realizes its benefits and sees that it works without any errors, he or she is likely to adopt the app, which was confirmed by one participant, who said, "*integration between governmental organizations. I think creating the integration of services between organizations will make citizens more relaxed, and that leads to adopting the apps. I think integration has a big influence on the adoption of m-government*". The same participant said, "*Errors and flaws in apps, including design issues, usability of the app and so on may affect citizens' decisions to adopt m-government*". The initiatives manager in Yesser agreed that trust is an important factor in the adoption of m-government, saying, "*We care about and are aware of that. If there is lack of trust, the app will not be used.*"

*5.3 Usage experience*

Another important potential factor revealed by the data analysis is usage experience. Venkatesh and Davis (2000) Identified usage experience as a crucial factor in the adoption of new technology. In this context, the specialist in performance indicator measurement said, "*I consider usage experience as an important factor in the adoption of m-government"*. Furthermore, Venkatesh et al. (2003) suggested that a condition for the success of m-commerce and e-commerce is the users' experiences—that is, whether users are satisfied and whether these services satisfy their needs. The product manager for m-government in Yesser asserted that usage experience is an important factor in the adoption of m-government, saying, "*Absolutely. Usage experience is a crucial factor in the adoption*

*of m-government in Saudi Arabia and in other countries*". Wangpipatwong et al. (2008) claimed that the continued use of e-government services provides certain advantages for users, and they pointed out that real success for IS systems depends on continued—not temporary—use. Furthermore, Harris compared Hong Kong and the UK with regard to the adoption of m-commerce and found that the rate of adoption of m-commerce in Hong Kong was lower than in the UK because the usage experience in Hong Kong was less than in the UK. Regarding this point, the initiatives manger in Yesser asserted, "*We care about and are aware of that, and we are seeking to provide the apps that are easy to use and useful to create a better user experience*".

*5.3 Enjoyment*

Previous studies found that enjoyment was a crucial factor in the adoption of new technology (Davis et al., 1992; Kulviwat et al., 2007; Sun & Zhang, 2006). Similarly, Anckar and D'incau (2002) pointed out that enjoyment is a key factor in inspiring and encouraging users to use mobile services anywhere and anytime. Similarly, one participant said, "*If the user enjoys using services, that means user is happy and satisfied with these services and that affects the adoption of m-government. So enjoyment is an important factor*". Moreover, another participant noted, "*enjoyment is crucial factor in the adoption of m-government*".

In contrast, regarding the potential factor of enjoyment, the business requirement and architecture manager said, *"I think it does not have a role in this matter because I think a citizen uses apps from governmental organizations for a specific objective, not for enjoyment. I do not think enjoyment will assist and encourage citizens to use apps because there are many other entertaining apps in mobile phones. So I think citizens use governmental apps for specific goals. To conclude, enjoyment has no effect on the adoption of m-government"*. Another participant responded, *"I think [enjoyment] does not affect the adoption of m-government because mobile phones have many other entertaining apps"* Similarly, the product manager for m-government asserted, "*it does not influence the adoption of m-government. For example, I downloaded Abshar not for enjoyment but to use services. These days in Saudi Arabia, enjoyment is not considered a factor in the adoption of m-government*". In other words, most participants claimed that enjoyment does not influence the adoption of m-government in the Saudi context. Although previous studies found that enjoyment was important factor in the adoption of new technologies in other contexts, according to the responses of the participants in this study, enjoyment is not a significant factor in the Saudi context regarding the adoption of m-government.

*5.4 Awareness*

Awareness is another important potential factor that emerged from the data analysis. In a previous study, O Alfarraj (2013) noted that in developing countries, awareness is an essential factor in the adoption of information systems projects. Similarly, the product manager for m-government in Yesser asserted, "*I think the most important factor in this matter is awareness, especially in governmental sectors. Awareness has a big influence on the adoption of m-government. Therefore, awareness is an important factor for citizens to adopt m-government"*. Alotaibi et al. (2014) also asserted that users' awareness is important because it is vital factor in the acceptance of new electronic systems. They also recommended that awareness programs should focus on managers in organizations and agencies rather than staff because they affect the staff's attitudes, and they have an important role in ensuring the acceptance of the new technology (Alotaibi et al., 2014). With regard to this aspect, the initiatives manger in Yesser confirmed, "*I think there are two main important factors in the adoption of m-government, awareness and privacy*". Several previous studies(Abunadi, 2012; Al-Tourki et al., 2012) recommended that media such as newspapers, social networks such as Facebook and television advertisements should be used to raise the awareness of citizens. Similarly, the business requirement and architecture manager asserted, "*marketing (advertising for apps). If the app is not well advertised, it will not be adopted successfully. In other words, awareness has a positive effect on apps adoption*".

### *5.5 Security*

Security is another important potential factor revealed by the data analysis. A previous study found that when users feel that government websites are unsafe, they will not use these sites because they want to protect personal data (Teo et al., 2008). Similarly, the business requirement and architecture manager stated, "*Privacy is very important in this matter. When the citizen knows that some other persons will read his personal data in apps, it will lead to abandoning these apps. In other words, if the privacy of apps increases, that will lead to adopting them, and the opposite is correct*". Regarding the adoption of m-government services, H. Al-Busaidi (2012) recommended that the government must assure users that their personal data will be protected and that it will not be sold to others. A previous study asserted that privacy is most essential problem affecting the adoption of m-government (Chang & Kannan, 2003). Alotaibi et al. (2014) also mentioned that security is a very important factor in the use of government services. Regarding the security, another participant asserted, "*I think privacy is very important for users especially in our culture. So I think privacy is a vital factor in m-government*". Similarly, a previous study found that security was a large barrier to the adoption of mobile services (Fang et al., 2005). The initiatives manger in Yesser confirmed, "*I think there are two main important factors in the adoption of m-government, awareness and privacy*".

### *5.6 Summarizing findings and confirming that the findings align with previous findings*

This study has explored the effect of six factors on the adoption of m-government services. Table 3 summarizes the current study's findings and, with the exception of enjoyment, compares these potential factors to the findings of previous studies.

Table 3 Conformity of current findings with previous findings

| ***labelled potential factors*** | ***Previous studies*** |
|---|---|
| M-government adoption in Saudi Arabia | (Alhussain, 2012; Alrowili, Alotaibi, & Alharbi, 2015; Alsenaidy & Ahmad, 2012);(Ahmad et al., 2014) |
| Perceived trustworthiness | (H. Al-Busaidi, 2012; Wei et al., 2009);(Abunadi, 2012; Alomari et al., 2009; Alsaghier et al., 2009; Bélanger & Carter, 2008; Horst et al., 2007; Lee et al., 2011; Warkentin et al., 2002; West, 2008) |
| Usage experience | (Harris et al., 2005; Venkatesh & Davis, 2000; Venkatesh et al., 2003; Wangpipatwong et al., 2008) |
| Awareness | (Abunadi, 2012; Al-Tourki et al., 2012; O Alfarraj, 2013; Alotaibi et al., 2014) |
| Security | (H. Al-Busaidi, 2012; Alotaibi et al., 2014; Chang & Kannan, 2003; Fang et al., 2005; Teo et al., 2008) |

*5.7 Refined Research Model:*

Figure 3 refined research model in this study. This model will be examined and measured quantitatively in next study.

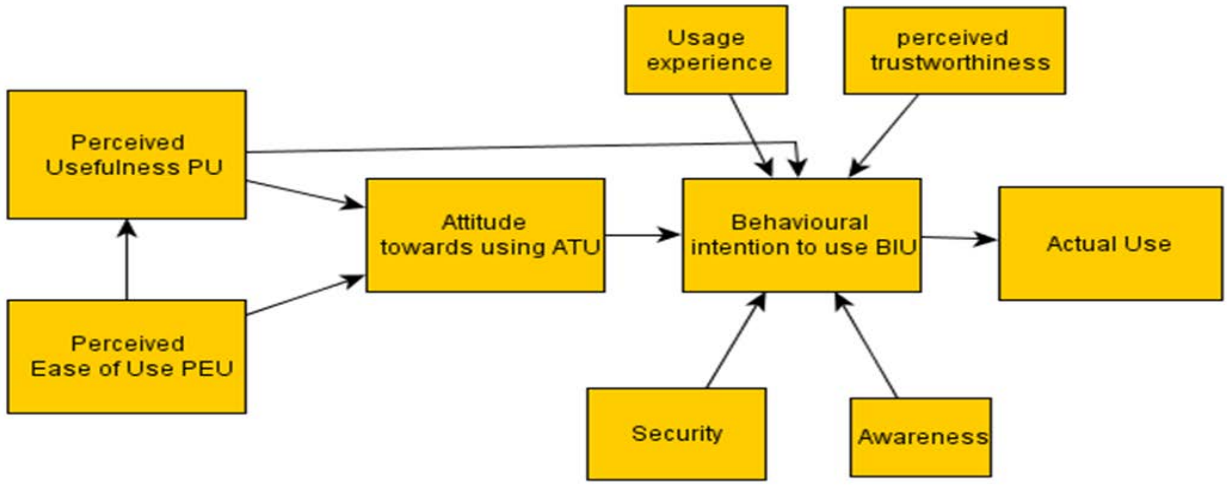



Figure 3. Refined research model in this study.

## 6. Conclusions

The qualitative data collected from the Yesser experts through semi-structured interviews were presented and discussed. This data analysis revealed six main potential factors and ten sub-potential factors that may influence the adoption of m-government. In this study, codes were extracted from the raw data. The main potential factors are as follows: the adoption of m-government in Saudi Arabia, perceived trustworthiness, usage experience, enjoyment, awareness and security. These potential factors were found in previous studies on the adoption of new technology. In other words, this study found some potential factors might influence on m-government adoption in Saudi context that are perceived trustworthiness, usage experience, awareness and security. On contrast, this study found that enjoyment may does not have influence on m-government adoption in Saudi context.

Future work, this research is part of the large research project that aims to identify and measure factors that influence on users' intention to adopt m-government applications in Saudi Arabia by examining and validating the applicability of the TAM. Thus, the potential factors that have been explored in this study will be quantitatively examined and measured in next study, and the results are forthcoming.

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