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Abstract

There is limited research studying mobile phone adoption by actual consumers in the Arab countries, although the region had an incredible growth in mobile usage between the years 2000 and 2014. The main aim of this paper is to develop a conceptual framework that can explain mobile adoption by customers in the Arab countries. An extensive analysis of the existing literature related to technology adoption in general as well as mobile adoption in the Arab countries was conducted. Accordingly, this paper proposes a new conceptual model based on some modifications of the Unified Theory of Acceptance and Use of Technology (UTAUT2) and adding new variables which were also found related to the studied phenomenon. This research provides several important implications for researchers willing to study mobile adoption in the Arab countries as well as telecommunication companies operating or willing to operate in the region. Consequently, this model is set forward based on future empirical validation of it in Arab countries.

Keywords: Mobile adoption, Arab customers, mobile phone prices, Arab culture, technological infrastructure.

1. Introduction

The benefits that came as an outcome of technology usage have been widely acknowledged in the existing literature (Smith and Correa, 2005; Melenhorst *et al*., 2001; Atkinson and McKay; 2007). In particular, technology is important for developing countries (Miah and Omar, 2012; Ezell, 2012). According to Rogers (2003, p.177), technology adoption is the *"full use of an innovation as the best course of action available"*. Mobile telephones were a great tool in reducing the digital divide between developed and developing countries (Kamel and Farid, 2007; GSMA, 2013). There is a growing awareness of the requirement to address the issue of technology adoption in some places of the World that are peripheral as a result of economical restrictions or other barriers (Noruzi, 2006; Foster and Rosenzweig, 2010). It has been argued that the existing technology acceptance models and theories are not conclusive (Ghazizadeh, 2012). They can only be considered as a starting point (Göğüş *et al*., 2012; Carlsson *et al*., 2006). Furthermore, there is a lack of research on ICT adoption in the Middle East (which the Arab countries are part of) compared to the more developed countries (Rose and Straub, 1998; Rouibah and Hamdy, 2009). Baabdullah *et al*., (2013) stated that there is no

sufficient research on mobile adoption in the Middle East and recommended implementing the Unified Theory of Acceptance and Use of Technology (UTAUT2) (Venkatesh *et al*., 2012) into the context of the Middle East (which includes the Arab countries). Baabdullah *et al*., (2014) then developed a model for M-Government and M-Internet acceptance by users in one Arab country (Saudi Arabia). Mobile phones adoption is growing and understanding the way that users decide on their usage of mobile phones can help understanding many cultural shifts. The mobile penetration rate in the Arab countries exceeds the World's average mobile penetration rate (Alrawabdeh *et al*,. 2012). In 2013, there was a total of 391 million connections in the Arab countries (GSMA, 2013). These countries form a large market with a huge potential for mobile phone usage and adoption. This makes studying mobile adoption and usage in these countries significant in the field of technology adoption and usage. Therefore, identifying what can contribute to customer satisfaction in terms of mobile phones in these countries is crucial. This paper aims towards addressing this issue by identifying the factors that can affect mobile phone adoption in the Arab countries and combining them in one model.

Previous research showed that there are significant cultural differences between the Arab countries and other (non-Arab) countries (Rose and Straub, 1998). Other studies based on ICT adoption in the Arab countries (Rose and Straub, 1998; Loch *et al*., 2003; Rouibah and Hamdy, 2009) emphasised the significance of culture in the adoption of ICT in the Middle East. The Arab culture can be both a hindering and a supporting factor of technological adoption (Straub *et al*., 2001; Loch *et al*., 2003; Emdad *et al*., 2009). The Arab culture is high in power distance, high in uncertainty avoidance and moderate in masculinity/ femininity (Hofstede, 2010). Furthermore, the Arab culture is based on collectivism rather than individualism. Within these attributes of the Arab culture, the effect of social influence on behaviour intention towards using technology becomes even more dominant. Rose and Straub (1998) recommended that such a complicated culture like the Arab culture needs to be taken into account when attempting to understand ICT adoption in these countries. In their literature review concerning the Arab culture, Obeidat *et al*., (2012) found that there is a debate in the existing body of literature whether the concept of Arab culture can be generalized to include all countries or not. Some researchers emphasised that the Arab countries share similar values which apply to all of them in general (for example; Wilson, 1996; Dedoussis, 2004). On the other hand, Feghali (1997) stated that it is incorrect to imply that all Arab countries have the same culture. Also, researchers need to decide which subset of cultural values to be studied in their research based on the technology under investigation (El-Louadi and Evarard, 2004). Therefore, the model developed in this research includes a subset of the Arab cultural values which is related to mobile phone adoption.

The regulatory framework is highly varied in the Arab countries (International Telecommunication Union, 2013). The openness and competitiveness of the market are vital to increase the usage of technology due to their direct effect on price reduction (Varoudkis and Rossoto, 2004). The number of competitors in the market, the level of efficiency of the policies originated by the regulatory body, how open it is to international companies and the level of the individual's income are used to understand the competitiveness of the market (Varoudkis and Rossoto, 2004).

The main aim of this paper is to develop a conceptual framework that identifies the key constructs (factors) related to mobile phones adoption in the Arab countries by analysing the existing technology acceptance theories and the main concepts related to mobile phone adoption in the Arab countries.

2. Methodology

This research attempts to develop a model that includes the factors that can affect mobile phone adoption in the Arab countries. This is based on previous research undertaken in this area since the area of technology adoption is well developed and a high number of theories and models exist in this field. Therefore, the model built in this research is based on an extensive analysis of the existing literature and theories related to mobile phone adoption in order to obtain a better understanding of this phenomenon.

3. Technology adoption theories

This section provides an analysis of the main technology acceptance theories that are specifically related to mobile phone adoption and usage and can be applied to the context of the Arab countries. The theories are provided in a chronological order.

3.1 Technology acceptance model (TAM)

Davis (1989) explored the fundamental determinants of user acceptance of computers. The work of TAM streamed from the Theory of Reasoned Action (TRA) developed by Fishbein and Ajzen (1975) which was related to individual's behaviour (Kwon and Chidambaram, 2000; Wu and Wang, 2005). Based on the findings, the main determinants of technology adoption were perceived usefulness and perceived ease of use. Perceived usefulness was a significant determinant of technology adoption (Davis, 1989; Davis *et al*., 1989; Taylor and Todd 1995a; Taylor and Todd 1995b; Igbaria *et al*., 1996). In fact, it was found more significant than perceived ease of use in many studies (e.g Son *et al*., 2012; Keil *et al*.,1995). TAM is one of the most robust models that have been validated by a significant number of studies (Saloman and Salman, 2013). However, the model was criticised in some studies too. It has been argued that TAM, on its own, is insufficient to predict individual's adoption of technology as its constructs are too general (Fang *et al*., 2005; Rouibah and Hamdy, 2009) and it does not take into account other important factors (Igbal and El-Gohary 2014). Also, self-reporting has been a major limitation of the TAM model (Chuttur, 2009). Furthermore, the model does not encounter culture-related values that can affect technology adoption.

3.2 The Cultural Influence Model for Information Technology Transfer

Straub *et al*., (2001) found that both Technological Culturation and culture specific beliefs and values (more specifically time) have a significant effect on system outcomes. National IT policies and technological infrastructure construct was also included but not tested. The culture specific beliefs and values construct in Straub *et al*, (2001) was substituted by social norms in Loch *et al's*. (2003) study as a factor that represents culture in a more general view. Although this model was not tested using mobile phones technology, it is closely related to the influence of the Arab culture on technology adoption and usage which can still be applied to mobile phone adoption and usage.

3.3 Diffusion of Innovation (DoI) theory

The Diffusion of Innovation (DoI) theory developed by Rogers (2003) analysed the main elements of the diffusion of innovation among different types of users. Rogers (2003, p.169) stated 5 stages of the innovation decision process including; "*knowledge, persuasion, decision, implementation and confirmation*". However, the author argued that in Eastern countries, the order of the first three steps can be "*knowledge, decision and persuasion*" (Rogers, 2003, p.178-179). This is mainly due to culture differences as peers' influence (subjective norm) is stronger in eastern countries.

3.4 Mobile Phone Technology Adoption Model (MOPTAM)

Factors related to culture were added to form the Mobile Phone Technology Adoption Model (MOPTAM) by Van Biljon and Kotze (2008) based on the modification of their original model created in 2007 (Van Biljon and Kotze, 2007). The authors argued that culture has specific dimensions in the case of mobile phone adoption. Also, the authors stated that social influence and other demographic, social, cultural, and contextual factors can affect mobile phone users (Van Biljon and Kotze, 2008).

3.5 The Unified Theory of Acceptance and Use of Technology (UTAUT2)

The first version of UTAUT was developed by Venkatesh *et al.*, (2003). The model was built from an organisational point of view using organisational settings. The model was built by gathering and testing eight main models related to technology usage including; the Theory of Reasoned Action (Fishbein and Ajzen, 1975), the Technology Acceptance Model (TAM) (Davis, 1989), the Motivational Model (Davis *et al.*, 1992), the Theory of Planned Behaviour (TPB) (Ajzen, 1991), Combined TAM and TPB (Taylor and Todd, 1995a), the Model of PC Utilization (Thompson *et al.*, 1991), the Innovation Diffusion Theory (Rogers, 2003) and Social Cognitive Theory (Bandura, 1981). The model was built by gathering and testing eight main models related to technology usage. Venkatesh *et al.*, (2012) further developed the theory (UTAUT2) to fit for the consumers' adoption case. The main constructs included; performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value and habit. The moderators were age, gender and experience. However, voluntariness of use was illuminated. Bagozzi (2007) discussed the limitations of the extensions of TAM such as the UTAUT including the high number of independent variables which makes the measuring process complicated and still not completely sufficient to understand the full picture of technology adoption.

4. The development of the conceptual framework

The UTAUT2 developed by Venkatesh *et al.*, (2012) combines the concepts from different technology acceptance theories. Furthermore, the model provides a more in-depth understanding of the needs of individual consumers as it includes the moderator factors (age, gender and experience). Also, the UTAUT2 was tested using mobile Internet technology which is not completely different from the context of mobile phone adoption. The UTAUT2 was tested in Hong Kong where factors like infrastructure, culture, economical growth and Internet penetration are different from the Arab countries. Therefore, the constructs can be re-tested for the case of the Arab countries. Baabdullah *et al.*, (2013) found that the UTAUT2 can very well be applied to study technology adoption within the Arabian context. The authors stated that the model can be modified and extended by adding new constructs applicable to the context of the Arab consumers' adoption.

Based on the above, the constructs of the UTAUT2 were selected to form the basis of the framework developed in this study. In addition, new constructs were adopted from the Cultural Influence Model for Information Technology Transfer developed by Straub *et al.*, (2001). There were many reasons for combining the Cultural Influence Model for Information Technology Transfer constructs, in particular, with the UTAUT2 in this research. First, the model was specifically developed for Arabs. Second, the model encounters and acknowledges the complex nature of the Arab culture, in particular, and its effect on technology transfer. Third, the model acknowledges the National IT development construct, although not tested in Straub *et al*'s (2001) research, which is a major area that must be addressed when studying mobile phone adoption in the Arab countries.

Based on the above, the main constructs of the research model were adapted from the UTAUT2 (Venkatesh *et al*., 2012) and the models developed by Straub *et al*., (2001) and Loch *et al*., (2003). These constructs are outlined below followed by the developed model (figure (1)).

Behaviour Intention- is a dependent variable affected by the independent variables in the model. Also, the effect of behaviour intention on usage behaviour was acknowledged in several previous studies (e.g. Venkatesh and Davis, 2000; Taylor and Todd, 1995b). **Actual Usage**- is a dependent variable affected by behaviour intention. Experience was found to moderate the effect of behaviour intention on actual usage (Venkatesh *et al*., 2012).

Perceived Relative Advantage (PRA) usefulness streams from performance expectancy and perceived usefulness which proved to be important in previous TA theories (e.g. Davis, 1989; Venkatesh *et al*., 2012; Alwahaishi and Snášel, 2013; Davis and Venkatesh; 1996; Adams *et al*.,1992). Similarly PRA (usefulness) adopted from Moore and Benbasat's (1991) study has a significant effect on behaviour intention. Wang *et al*., (2011) studied the relationship between PRA and perceived usefulness. The authors stated that the two terms are usually used interchangeably when studying TA. However, relative advantage is more accurate as it includes other competing technologies too. Venkatesh *et al*., (2003) found that the effect of performance expectancy is influenced by age and gender such that it is higher among young men.

Effort expectancy is expected to be important within the context of users in the Arab countries. Age, gender and experience were found to have a moderating influence on the effect of effort expectancy on behaviour intention (Venkatesh *et al*., 2003). The authors found that the effect of effort expectancy is stronger among older women with a low level of experience. In this research, education is also included as a moderating factor. Highly educated people used technologies earlier than less educated people as they find them easier to learn (Porter and Donthu, 2006).

Social influence is an important factor to determine behaviour intention for TA (Dhaha and Ali, 2014; Mtebe and Raisamo, 2014; Shah *et al*., 2014; Al-Hujran *et al*., 2014). Venkatesh *et al*., (2003) found that the effect of social influence on behaviour intention is influenced by the moderators age, gender and experience as it is stronger among older women with a low level of experience.

Facilitating conditions-were found to have a significant effect on both behaviour intention and actual usage (Venkatesh *et al*., 2012). Previous studies found that facilitating conditions have a significant influence on actual usage and intention (e.g. Akour and Dwairi, 2011; Alwahaishi and Snášel, 2013). Age and gender were found significant in Venkatesh *et al*'s., (2012) study in that it is more significant for older women. As the Arab users are less familiar with advanced new technologies, the level of experience is expected to have a significant moderating effect.

Enjoyment (hedonic motivation in UTAUT2) is expected to be important for the adoption of mobile phones due to the high number of mobile applications for gaming and entertainment. Enjoyment was found to be significant in previous studies (e.g. Nysveen *et al*., 2005; Khayyat and Heshmati, 2013; Kamel and Farid, 2007; Ha *et al*., 2007). Age, gender and experience moderate the effect of enjoyment on behaviour intention in such a way that it is stronger among younger men with a lower level of experience (Venkatesh *et al*., 2012). Within the context of this study, the effect of enjoyment on behaviour intention becomes stronger among higher income level users as they can afford to pay more.

Price has an important significant effect on behaviour intention. Price was found to be important for the Arab user's TA in previous studies (e.g. Kamel and Farid, 2007; Alrawabdeh *et al*., 2012; Puumalainen *et al*. 2011). Venkatesh *et al*., (2012) found that price is affected by age and gender in such a way that its influence on behaviour intention is higher among older women. It is further hypothesized that the effect of price is moderated by income. As income increases, price becomes less of an issue. Although, Alwahaishi and Snášel (2013) indicated that price is important even among higher income people.

Habit was found important in UTAUT2 (Venkatesh *et al*., 2012). Habit has a significant influence on behaviour intention as Arabs were found to develop habits of using mobile phones or checking them, sometimes even when not required (Hashem and Smith, 2010). Habit affects both behaviour intention and actual usage. Age, gender and experience were found to moderate the effect of habit which is stronger among older men with a higher level of experience (Venkatesh *et al*., 2012). The effect of habit is expected to be less among women as they pay more attention to detail when carrying out their tasks (Venkatesh *et al*., 2012).

Technological culturation defined as "*Influential experiences that individuals have had with technologically advanced cultures*" (Straub *et al*., 2001, p. 9) was found significant in previous studies including Hill *et al*., (1998), Staub *et al*'s., (2001) and Loch *et al*.'s (2003). This research studies the effect of informal technological culturation on behaviour intention. Due to culture related reasons, women in Arab countries cannot travel unless their husbands agree for them to do so (Kirdar, 2010). Therefore, technological culturation can be stronger among men. In particular, younger men, as they are more familiar with technology (Alkhunaizan and Love, 2012). Higher income people can afford to travel to more technologically advanced countries too.

Culture specific beliefs and values were found important in the studies conducted by Hill *et al*., (1998), Straub *et al*., (2001) and Loch *et al*., (2003). In this research, the culture specific beliefs and values construct takes the form of face-to-face vs technology mediated meetings. Arabs are known for their preference for face-to-face meetings (Enterprise Ireland, 2013, p.7; Rugh, 2004, p.13). Based on previous work such as Ali's (1990) work, an Arab's preference for face-to-face meetings is expected to have a significant effect on mobile adoption. Since older people are less familiar with technology (Alkhunaizan and Love, 2012), preference for face-to-face meetings rather than technology mediated ones is expected to be higher among older people. Women are less powerful and less independent than men (Kirdar, 2010). Therefore, it can be argued that preference for face-to-face meetings is higher among men. As experience increases, people's use of mobile technologies increases too (Venkatesh *et al*., 2012).

National IT development has a significant effect on behaviour intention. Straub *et al*., (2001, p.10) stated "*The overall construct reflects the level of support for technological development within a given nation*". National IT development was included in Straub *et al*., (2001) and Loch *et al*'s., (2003) studies. However, it was not tested from the consumer's point of view. This study provides an extension to these studies by analysing the effects of this construct on behaviour intention from the consumer's view. As younger people use technology more than older people (Alkhunaizan and Love, 2012), the effect of national IT development on behaviour intention is expected to be stronger among younger people. Men use technology products including mobiles more than women in developing countries (Gill *et al*, 2012 p.3). Therefore, the effect of National IT development is expected to be stronger among men.
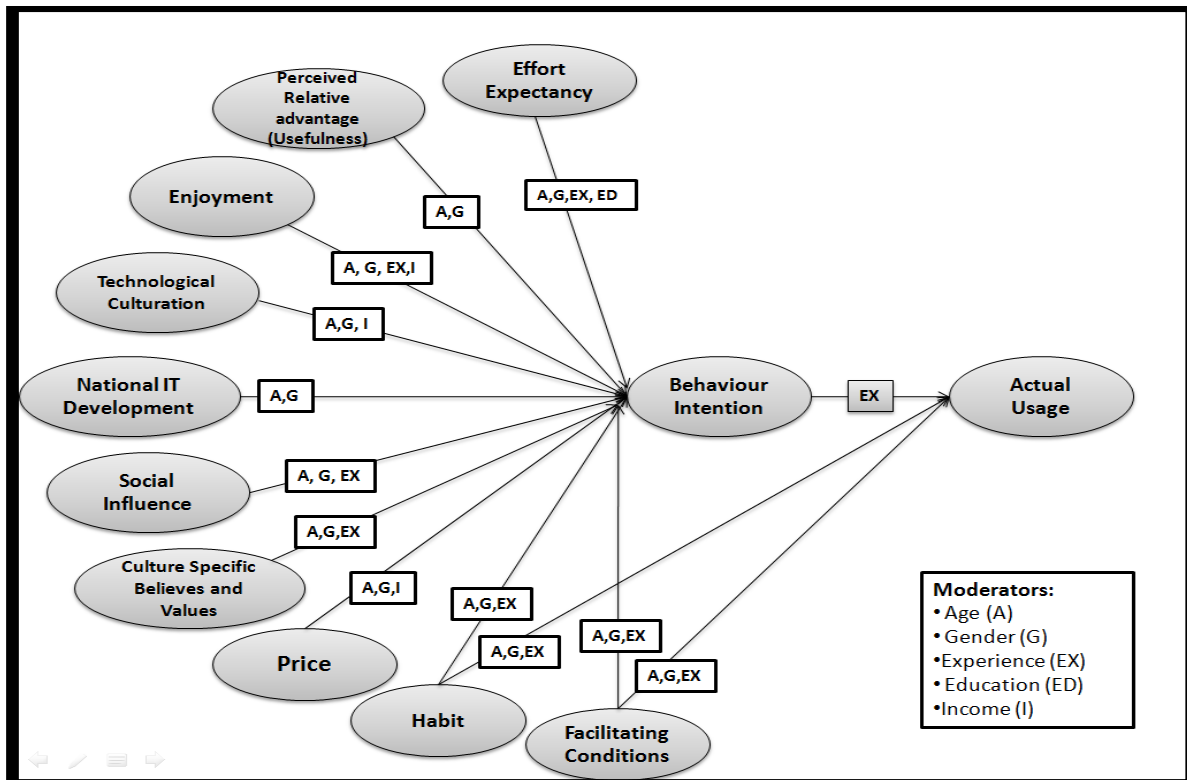
Figure (1): The research model

5. Research Implications and conclusions

This research has strategic implications to the telecommunication and technology companies currently operating or willing to operate in the Arab countries by extending their understanding of the main aspects they need to focus on. Also, it provides strategic implications for government policy concerning technology acceptance in these countries. This research went beyond the existing studies by combining variables from UTAUT2 and another model, testing the variable national IT development and adding two new moderators (income and education) in a new conceptual framework. One of the main limitations of this research is that it relies only on the existing literature to create a conceptual framework. Subsequent research will be conducted to test and empirically validate the model.

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