IS/IT ADOPTION RESEARCH IN THE SAUDI ARABIAN CONTEXT: ANALYSING PAST AND OUTLINING FUTURE RESEARCH DIRECTIONS

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Abstract

Through the analysis of relevant existing literature, the purpose of this research is to present an overview of research on the acceptance and use of technology in the Saudi Arabian context. An extensive literature review has been outlined, grouped and represented by Internet, M-Commerce, M-Banking, E-Government and M-Government Adoption, Acceptance, Usage and Diffusion in order to investigate topical and theoretical gaps that may require further research in the field.

Keywords: Acceptance and Use of Information Technology (IT)/ Information System (IS), Internet & Mobile Technologies, E-Government, The Middle East & Saudi Arabia

1 INTRODUCTION

The adoption and diffusion of emerging information and communication technologies (ICT) based applications said to have a positive impact on business as well as social development particularly in the context of developing countries (Albirini, 2006). Yet, the acceptance of emerging ICT-based applications (by consumers, citizens and businesses) outside of the western countries, especially in the Middle Eastern countries, is not only challenging but also a risk to business due to the strong influence of cultural, social and religious boundaries (Aldraehim et al., 2013; Alshehri et al., 2012). In this context, understanding end-users’/consumers’ intentions, behaviour, and related influencing factors (i.e. antecedents) towards the adoption and use of technology can be helpful for accelerating wider diffusion of ICT-based applications as an enabler of socio-economic development of the Middle Eastern countries such as the Kingdom of Saudi Arabia (Al-Ghaith et al., 2010; Manochehri et al., 2012; Barba-Sánchez et al., 2007). Examining antecedents of ICT adoption is also necessary as the decision makers from both public and private sectors as well as from both small and large organisations demand a strong acceptance validation before committing business cost for technological deployment (Yang et al., 2007).

Due to these reasons, a large number of studies have already been conducted to examine adoption of a number of emerging ICT (in the Saudi Arabian context), such as Internet (Adaileh, 2012; Alrashid, 2012; Mathrani and Alipour, 2010), broadband (Dwivedi, 2008; Dwivedi and Weerakkody, 2007; Gulati and Yates, 2012), electronic commerce (AlGhamdi et al., 2013; Alotaibi, 2013; Ahmad and Agrawal, 2012) and electronic government (Alsowoyegh, 2012; Baakeel, 2012; Basri, 2012). Such research has been published in a diverse range of outlets (i.e. journals and conferences) and widely scattered. This makes it difficult to new researchers to identify existing appropriate research when they begin a new project. Due to this, there is a danger of a similar research being repeated by different
researchers which ultimately lead to a loss of researchers’ productivity due to difficulty in publishing redundant research. This can be avoided by undertaking a systematic and comprehensive review of available research on the topic of interest so that existing knowledge can be analysed, synthesised and disseminated for the benefit of the scholarly community.

Several such efforts have been made for analysing and synthesising existing knowledge that includes adoption and diffusion (Choudrie and Dwivedi, 2005; Dwivedi et al., 2010; Kapoor et al., 2012; Williams et al., 2009), RFID (Irani et al., 2010), institutional theory in IS research (Weerakkody et al., 2009), knowledge management (Dwivedi et al., 2011), business/IT alignment (Miller et al., 2013; 2012), electronic government (Rana et al., 2013; 2012; 2011), mobile payment (Slade et al., 2013) and mobile ticketing (Kapoor et al. 2013). Similar efforts have also been made to synthesise existing research in the Middle Eastern context; for example, research on adoption of knowledge management systems in the Saudi Arabian context have been reviewed (Alatawi et al., 2013a) and further conceptualised (Alatawi et al., 2013b). Similarly, literature on electronic government in Middle Eastern context has been thoroughly reviewed (Alryalat et al., 2013) and conceptualised (Alryalat et al., 2012) in order to give a detailed understanding of the topic. Other such examples include review and conceptualisation of self-service technologies in a Jordanian context (Alawan et al., 2013ab) and human resource information systems (Al-Khowaiter et al., 2013ab).

However, a detailed exploration of existing research suggests that no systematic review (except an initial effort by Baabdullah et al., 2013) has recently been conducted for analysing and synthesising ICT adoption research (in general without focusing on a particular technology) in the Saudi Arabian context. Given relevance of the topic and a large interest in studying such a topic, it was deemed appropriate to exert such effort. Hence, this research aims to undertake a systematic review of existing studies that have examined adoption, acceptance, usage and diffusion of emerging ICT-based applications (such as Internet, M-Commerce, M-Banking, E-Government and M-Government) in the Saudi Arabian context in order to identify topical and theoretical gaps and fruitful lines of enquiry that can form a guiding basis for future research.

The remaining sections of this submission are organised as follows: the next section outlines and describes the research methodology employed to conduct this systematic review. Section 3 then presents an analysis of current literature and identifies some of the limitations of the existing research and possible directions for future effort. Further discussion is provided on this in Section 4 before presenting the conclusion in Section 5.

2 METHODOLOGY

By using various online databases and professional MIS research sources such as Web of Knowledge, Emerald, IEEE Xplore, Business Source Complete (EBSCO), ProQuest Business Collection, ScienceDirect (Elsevier), SCOPUS (Elsevier), SpringerLink and Google Scholar, reviewing the acceptance and use of technology in the Saudi Arabian context will be presented in thematic tables in order to find future research based on the previous research papers' limitations and future recommendations. The gap that will be filled with this research lies in the identification of the factors that affect consumer acceptance and use of IT in the Saudi Arabian context, as well as the correlation that exists between them. Despite the fact that past studies have indicated the correlations that exist between consumer acceptance and use, and factors that include mobility, security, cost, experience of use etc., a more comprehensive understanding of how these factors actually correlate with consumer acceptance and use will help to effectively eliminate the gap that exists in the IT consumer acceptance and use context. This will be done by advising new IT/IS that can be adopted, and identifying additional constructs, factors, mediators and relationships related to theories that can be applied or extended on IT/IS as a new model.

Up to 90 studies conducted in the context of the Middle East including Technology Acceptance Model (TAM), Theory of Reasoned Action (TRA), Theory of Planned Behaviour (TPB) and the Unified Theory of Acceptance and Use of Technology (UTAUT) have been also scanned in order to examine UTAUT2 as the latest theory developed in 2012, and to extend it by integrating new constructs and relationships based on a review and synthesis prepared by understanding the context of consumer acceptance and use of IT presented in the literature review with a comparison between the original
theory and the suggested model. As there are 15 studies out of 90 conducted UTAUT research and 9 of them were completed in Saudi Arabia, this indicates that the up-to-date concept of consumer acceptance and use of technology may require further investigation in the Middle East. In this study, and with the increase of the number of mobile internet users in the Middle East, especially in Saudi Arabia as subscriptions to the mobile broadband reached 11.5 million at the end of 2011 representing 40.5 per cent of the population (Ethos Interactive, 2012), Mobile Internet and Mobile Government technologies will be selected to test UTAUT2 as it has not been well tested yet in the Middle East or widely extended in the field. The current research will focus on two important concepts of how UTAUT2 influences the context of consumer acceptance and use of IT, and how the extended UTAUT2 or the suggested theoretical framework contributes to the field. This research will also outline problems, constructs and relationships related to the theory tested and extended in order to list all advantages and disadvantages presented by a comprehensive comparison.

3 LITERATURE REVIEW ANALYSIS

3.1 The Acceptance and Use of IT/IS in the Saudi Arabian context

The acceptance and use of technology in the Saudi Arabian context will be presented in thematic tables and summarised texts; this directs future studies in conducting further research investigating topical and theoretical gaps based on the previous studies' limitations and future research recommendations.

<table>
<thead>
<tr>
<th>Theme</th>
<th>Citation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet Usage</td>
<td>Adaileh (2012); Al Nashmi et al. (2010); Al-Asmari (2005); Al-Ghaith et al. (2010); Al-Hawari et al. (2008); Al-Jetaily et al. (2003); Al-Kahtani et al. (2006); Al-Zoman and Al-Zoman (2002); Al-Shohaib (2005); Alshankity and Alshawi (2008); Foster et al. (2005); Hattingh et al. (2011); Hattingh et al. (2012); Oshan (2007); Simsim (2011); Wyne and HashimNainar (2002); AlGhamdi and Almohedib (2011); Almahroos (2012); Breslow and Allagui (2011); Ghashghai and Lewis (2003); Sait et al. (2003a); Sait and Al-Tawil (2007); Sait et al. (2009); Sait et al. (2003b)</td>
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<tr>
<td>Internet Adoption</td>
<td>Al-Ghaith et al. (2010); Al-Shohaib et al. (2009); Alrashid (2012); Shalhoub (2006); Al-Shohaib (2005); Al-Shohaib et al. (2010); Alsalloum (2005); Almobarraz (2007); Al-Wehaibi et al. (2008)</td>
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<tr>
<td>Internet Diffusion</td>
<td>Arnum and Conti (1998); Loch et al. (2003); Al-Shohaib (2005); Beilock and Dimitrova (2003); Mathrani and Alipour (2010); Fulih (2002)</td>
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<tr>
<td>Internet Ownership</td>
<td>Oghia and Indelicato (2011)</td>
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<td>Internet Effects</td>
<td>Albirini (2008); Sait et al. (2003a); Sait et al. (2009); Chaurasia et al. (2011)</td>
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<td>Internet Pricing</td>
<td>Al-Heizan (2002)</td>
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<td>Broadband Adoption</td>
<td>Dwivedi (2008); Gerami (2010); Weerakkody (2008); Dwivedi and Weerakkody (2007); Dwivedi and Weerakkody (2006)</td>
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<tr>
<td>Broadband Diffusion</td>
<td>Yates et al. (2011); Gulati and Yates (2012); Gulati and Yates (2010); Williams et al. (2007)</td>
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<td>Other Groups</td>
<td>Al Lily (2011); Al-Saggaf and Begg (2004); Hermida (2002); Elghohary (2008); Alterman (2000); Alqudsi-ghabra et al. (2011); Anderson (2007); Zittrain and Edelman (2002); Ostrum (2011)</td>
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Table1: Internet Adoption, Acceptance, Usage and Diffusion in the Saudi Arabian context

By reviewing various literatures and case studies; analysing online discussions; adopting quantitative research method and model-based research; linking Grounded Theory Methodology (GTM); conducting interviews and web-based surveys; designing self-administered questionnaires; following
TRI scale; using Diffusion Of Innovations (DOI) theory, Social Construct Theory and Negotiating adjustment to KSA: Internet a lifeline to the Real World theory, Internet Adoption, Acceptance, Usage and Diffusion in the Saudi Arabia context have been researched from several aspects as grouped above in Table1. Internet usage research has been widely conducted. However, the key results, limitations and future recommendations can also be found. Scholars were discussing the challenges small businesses face as they try to implement the Internet in their operations to enable stakeholders to take appropriate measures to solve the problems; making great contributions in relation to Internet use among women in Saudi Arabia to improve Internet usage by women; revealing some of the functions of the Internet such as communication, information source and socialisation are very important; presenting comprehensive research that can help to solve social issues regarding the use of the Internet in Saudi Arabia.

<table>
<thead>
<tr>
<th>Research limitation/motivation</th>
<th>Recommendation for Future Research</th>
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<tbody>
<tr>
<td>There is no research found specifically talking about internet acceptance in Saudi Arabia.</td>
<td>This area should be investigated more in the Saudi Arabian context to understand how consumers accept and use the Internet.</td>
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<tr>
<td>Internet usage in Saudi Arabia has been widely researched. However, limitations and recommendations mentioned in the previous studies aid future research to tailor gaps found in this area.</td>
<td>Further research that compares SMEs and large-scale businesses should be done to determine where the difference in adoption and usage of the Internet comes (Adaileh, 2012); further study to be done in the relationship between Internet usage for instructional purposes by EFL teachers and the level of achievement of students (Al-Asmari, 2005); it is important to create websites with culture in mind when disseminating important information (Foster et al., 2005); it is also very important to encourage many stakeholders to develop cultural and practical approaches that would enable the public to take advantage of the benefits brought by technology (Ghashghai and Lewis, 2003). It should be noted that only a few researches only include the online population as the sample - see Sait et al. (2003b). Thus, it could not reflect the views of all people as it failed to reflect the response of those who were not online.</td>
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Table2: Limitation/motivation and future recommendation relating to research on the Internet in the Saudi Arabian context

Only 9 studies were conducted in Internet adoption in Saudi Arabia, their key findings are as follows: lack of trust and security are some of the major impediments to online transactions that may decrease the public's adoption of E-Commerce; the adoption and usage of the Internet is influenced by factors such as the characteristics of the adoption of new technology and privacy of information; there has been a consensus that factors such as education level, age and occupation determine those who adopt and use the internet and those who do not; understanding the causes of differences that exist in the adoption and use of the internet by the public relations professionals in the public and private institutions; enabling scholars to do as much as they can to change the structures of their organisations to include suitable adoption and use of technology; determining the changing of people’s perception concerning the adoption of online buying technologies; the authoritarian decision-making style in the public sector hinders the adoption of the internet in the institutions. On the other hand, the collaborative forms of making decisions in the private organisations encourage employees to adopt and use the current technological innovations to improve the efficiency and innovation; customers’ personal information acquired through the internet has enabled successful companies to design their products and services to meet the needs of customers; the internet privacy issues can be solved through the implementation of laws, following the E-Commerce code of conduct, and ensuring that the internet service providers strengthen and follow regulations that concern their privacy policy; the majority of faculty members adopted the internet and used it for research, teaching and socialising. Few research papers studied internet diffusion in Saudi Arabia; their key findings can be summarised as follows: technology and culture are two aspects that go hand in hand and influence each other; the per capita income determined the diffusion of the internet in most users in various countries. The level of
people’s openness in the society and the level of liberty enjoyed by people determined the diffusion and use of the internet. The state of infrastructure also contributed to the diffusion of the internet in various regions.

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<tr>
<td>Only 9 studies conducted in Saudi Arabia covered the adoption of internet.</td>
<td>This area may require further research as the slow usage and adoption of the internet in GCC is majorly caused by conservatism nature of the countries (Alrashid, 2012); therefore, future research should concentrate on how those countries properly adopt the internet.</td>
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<td>Few research papers studied the diffusion of internet in Saudi Arabia.</td>
<td>Developed countries are adopting and utilising new technologies such as the internet at a faster rate and continue in their states compared to developing countries whose adoption and use of the internet is slow (Arnum and Conti, 1998). The access of websites is restricted in the areas related to religion, social networking, politics, news channels and entertainment in Saudi Arabia (Mathrani and Alipour, 2010). Therefore, the internet diffusion should be researched more in Saudi Arabia in order to determine factors that may help in expanding the diffusion of the internet.</td>
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Table 3: Internet limitation/motivation and future recommendation in the Saudi Arabian context

While some of the sources are grouped under ‘Internet Effect, Ownership, pricing and other groups’, they are very important in the topic as they provide an understanding on the various aspects of internet technology including its innovation, implementation, pricing and technologies used in developing countries such as Saudi Arabia. While broadband is used to connect to the internet, it was grouped separately as it represents a different technology; summarised key findings as follows: investigating the factors that influence attitude towards the broadband adoption in the Kingdom of Saudi Arabia; the main factors that hindered fast adoption of broadband are service quality, usage, age, connection type, accommodation type and usefulness. Another factor that may be contributing to slow adoption is the regulation placed on broadband. Broadband is a new technology that improves the speed and quality of the Internet. By discussing this, it encourages the use of new technologies to provide quality and fast internet connection; the impact of policy and governance on the diffusion of broadband in the developed world found that successful adoption and use of the internet in many organisations depend on the culture of administration that incorporates good governance and the amount of investment done on information communication technology (ICT); the broadband diffusion can be clearly seen in the developed countries that have invented heavily in information communication and technology, have implemented good governance, have highly educated citizens and have encouraged urbanisation; the diffusion of broadband technology is evident in the countries with the culture of sound governance and an allocation of a lot of money into the information communication technology sectors. Good governance and ICT infrastructure encourage competition in all sectors, including business, government and education; therefore, improving standard of living of citizens of such countries. It clearly seems that Mobile Internet technology has not been researched yet and known as an important concept in the acceptance and use of technology in the Saudi Arabian context.

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<td>Broadband technology in Saudi Arabia is underdeveloped, and only a few papers have researched its adoption and diffusion.</td>
<td>Adoption of the internet has been very slow in the region because of the poor connectivity, website filtration and slow development of infrastructure (Dwivedi, 2008). This type of technology should be studied more in its acceptance, adoption, usage and diffusion as it is very helpful to investigate new technologies such as broadband and provide ways in which it can be used for.</td>
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Table 4: Internet limitation/motivation and future recommendation in the Saudi Arabian context
By reviewing research articles, conducting online questionnaires, utilising Q-Methodology, performing a meta-analysis and quantitative case study, doing telephone interviews and interviews as a qualitative survey methodology, semi-structured interviews, observations, reading electronic documents and reports, using Statistical Packages for the Social Sciences (SPSS) and Partial Least square (PLS), AMOS tools and implementation of structural equation model, employing TAM, UTAUT, DOI, TPB and web trust models, Technological-Organisation-Environment (TOE) framework, generating new frameworks and models, E-Government Adoption, Acceptance, Usage and Diffusion in the Saudi Arabian context have been researched from several aspects as grouped above in Table5. Key findings of E-Government acceptance can be outlined as follows: investigating and analysing the key factors responsible towards the adoption of E-Government service among citizens; investigating and analysing the impact of website quality on the adoption of E-Government service among citizens; social, trust and gender influence the acceptance of E-Government by citizens; developing a powerful instrument for measuring the acceptance of e-public services by Saudi citizens which provides various stakeholders with the opportunity to utilise it to study various strategies; understanding the user’s perspective towards acceptance of E-Government services so that these services can be improved towards the acceptance as a business practice which are limited due to lack of computers availability and Internet access; lack of training, resistance to change, culture and language barrier influence the public sector users to accept technologies; it is assumed that privacy and

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<th>Theme</th>
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<tbody>
<tr>
<td>E-Government Acceptance</td>
<td>Alshehri et al (2012a); Alshehri et al (2012c); Alzahrani (2011); Alzahrani et al. (2012); Baakeel (2012); Basri (2012); Alzahrani and Goodwin (2012)</td>
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<tr>
<td>E-Government Usage</td>
<td>Abanumy and Mayhew (2005); Basri (2012); Imran and Gregor (2007)</td>
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<tr>
<td>E-Government Adoption</td>
<td>Alshehri et al (2012a); Alshehri et al (2012b); Alshehri et al. (2012c); Al-Shehry et al. (2006); Al-Sobhi (2011); Al-Sobhi et al. (2009); Al-Sobhi et al. (2010a); Al-Sobhi et al. (2011); Al-Sobhi et al. (2012); Al-Sobhi et al. (2010b); Alanezi et al. (2011); Alateyah et al. (2012a); Alateyah et al. (2012b); Alldhabaan (2012); Alghamdi et al. (2011a); Al-Shehry (2009); Alshehri and Drew (2010); Alshehri et al. (2012); Alsowoyegh (2012); Al-Shehry et al. (2009); Sharief and Yahya (2012)</td>
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<td>E-Government Diffusion</td>
<td>Al-Sobhi and Weerakkody (2010); Al-Sobhi et al. (2009); Al-Sobhi et al. (2010a); Rorissa et al. (2010); AlGhamdi et al. (2011)</td>
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<td>E-Government Development</td>
<td>Al-Mushayt et al. (2012); Hammer and Al-Qahtani (2009); Saghafi et al. (2011)</td>
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<td>E-Government Security</td>
<td>Alfawaz et al. (2008); Alsgahier et al. (2009)</td>
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<td>E-Government Challenges</td>
<td>Sahraoui et al. (2006)</td>
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<td>E-Government Implementation</td>
<td>Alharbi (2006); Drew (2011); Gulati and Yates (2011)</td>
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<tr>
<td>E-Government Assimilation</td>
<td>Pudjianto and Hangjung (2009)</td>
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<td>Biotechnology Acceptance in E-Government</td>
<td>Alhussain and Drew (2009)</td>
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<tr>
<td>Biotechnology Adoption in E-Government</td>
<td>Alhussain and Drew (2010)</td>
</tr>
<tr>
<td>Other Groups</td>
<td>Al-Fakhri et al. (2008); Abanumy et al. (2005); Abdallah and Khalil (2009); Alanezi et al. (2012); Alfarraj et al. (2011); Almalki et al. (2012); Alryalat et al. (2012b); Alsaiflar et al. (2009); Alshawi and Alalwany (2009); Bawazir (2006); Chanchary and Islam (2011); Sahraoui (2005); Halpern et al. (2012); Katchanovski and La Porte (2009); Pankowska (2008); Al-Khouri and Bal (2006)</td>
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Table5: E-Government Adoption, Acceptance, Usage and Diffusion in the Saudi Arabian context
trust correlate with each other positively as strong privacy will increase the level of trust on E-Government service. In E-Government usage, few papers here identify holes in ministries’ websites and recommending solutions. Also, there has not been enough research in E-Government Diffusion in the Saudi Arabian context; few paper identify several factors that influence the adoption and usage of E-Commerce in Saudi Arabia, the support received from government becomes the most influential factor; studying the similarities among of E-Government websites in the Middle East and North Africa and found that similarities existed in the stages of development of the services offered by E-Government websites.

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<thead>
<tr>
<th>Research limitation/motivation</th>
<th>Recommendation for Future Research</th>
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<tbody>
<tr>
<td>E-Government acceptance, usage and diffusion in the Saudi Arabian context have not yet been well covered.</td>
<td>It was found that factors that inhibit the adoption and use of information communication and technology in developing countries include political unrest, lack of or poor ICT infrastructure, access to ICT infrastructure by users and leadership unwillingness to accept technological change (Imran &amp; Gregor, 2007). Accordingly, further research may focus on how developing countries overcome these obstacles. Also, factors such as cultural factors could be investigated as a factor that influences the acceptance of E-Government.</td>
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Table 6: E-Government limitation/motivation and future recommendation in the Saudi Arabian context

Research papers completed in E-Government adoption in the Saudi Arabian context found key findings as follows: determining the essential keys for adoption and success of E-Government applications and services as many governments around the world aim to facilitate and improve their services to all citizens in a timely, easy, high quality and effective manner with great productivity and time savings; the efforts put by citizens towards use of E-Government and the trust citizens have on intermediary organisations highly determines their adoption and use of E-Government; though adoption of E-Government is influenced by digital divide, trust and accessibility, the intermediaries are playing a major role in the adoption of the E-Government; intermediaries have not successfully encouraged citizens to adopt and use E-Government because citizens do not trust them and their services such as training users on the use of E-Government services; implementation of E-Government to Saudi Arabia faces many challenges. Trust, transparency and security are the major issues that influence E-Government adoption. Also, scholars were determining the readiness of organisations to improve their E-Government strategies; lack of information communication technology (ICT) infrastructure, security and privacy, lack of training, and lack of policies and regulations that govern E-Government use hindered success adoption of E-Government. Some sources also discuss other aspects such as the security issues in E-Government, implementation, challenges, assimilation, acceptance and adoption of biometric technology in E-Government, and development of secure and user friendly E-Government systems.
Research limitation/motivation | Recommendation for Future Research
---|---
E-Government adoption in Saudi Arabia has been widely researched. However, limitations and recommendations mentioned in the previous studies aid future research to tailor gaps found in the field. | The attitude of users towards E-Government, lack of skills, poverty and illiteracy influence the adoption and use of E-Government in Saudi Arabia (Alateyah et al., 2012ab). E-Government infrastructure, culture, information communication and technology literacy, the usability and accessibility of websites, gender and technical problems affect the adoption of E-Government in Saudi Arabia (Alateyah et al., 2012ab). The adoption of E-Government in the Kingdom of Saudi Arabia is motivated by political, economic, social, cultural, geographic and managerial factors (Al-Shehry, 2009). Researchers may study the extent to which these factors influence the attitude of users toward E-Government. Furthermore, investigating new constructs related to this area will lead to a better understanding of the adoption of E-Government. The Saudi Arabian government is motivated to incorporate E-Government in its operations by the urge to improve its economy and attract more investors including the best technicians all over the world and to deliver timely information and services to people in its large geographical area, to improve their cultural and religious practices by empowering women to participate in public affairs, to encourage young people especially those below 25 years to adopt Internet technology, and to improve its politics (Al-Shehry et al., 2006); therefore, further research may concentrate on how the Saudi government enhances its e-operations. While many researchers have investigated the adoption and use of E-Government, they have not concentrated on the role intermediaries play in E-Government adoption (Al-Sobhi et al., 2010a).

Table7: E-Government limitation/motivation and future recommendation in the Saudi Arabian context

<table>
<thead>
<tr>
<th>Theme</th>
<th>Citation</th>
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<tbody>
<tr>
<td>M-Government Development</td>
<td>Al-Khalifa (2011)</td>
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<tr>
<td>M-Government Challenges and Success Factors</td>
<td>Almutairi (2011)</td>
</tr>
<tr>
<td>M-Government Implementation</td>
<td>Abanumy and Mayhew (2005); Alsenaidy and Ahmad (2012)</td>
</tr>
<tr>
<td>Biometrics in M-Government</td>
<td>Alhussain and Drew (2012); Alhussain et al. (2010)</td>
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<tr>
<td>Other Groups</td>
<td>Al-Solbi and Mayhew (2005)</td>
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Table8: M-Government Adoption, Acceptance, Usage and Diffusion in the Saudi Arabian context

As this research will select Mobile Internet and Mobile Government technologies to be tested in Saudi Arabia, revising M-Commerce, M-Banking and Mobile Government papers done will lead to a better understanding of what were topically and theoretically researched in Mobile technologies before. Now, upon considering the only two M-Commerce studies, the first develops a methodology for investigating current studies that have been made on the adoption of M-Commerce in the Middle East (including the success of a series of factors in terms of deploying M-Commerce throughout the region). Al Hosni et al. (2010) found that the success of M-Commerce in the Middle East is conditioned by the following factors: mobility of mobile technology devices; security of information; location-based services; time of information delivery; costs of devices; customised technology and culture. The second study was conducted by Alotaibi (2010); it builds on the premise that a quantitative research methodology may be used to build the foundations of TAM that will allow for the existing (literature) gap between engagement and empowerment of customers in using mobile devices for various purposes. The study comprised 500 test subjects in Saudi Arabia; results were obtained using multiple regression equations and structural equation modelling.
Research limitation/motivation | Recommendation for Future Research
---|---
It was discovered that only two studies have been conducted on M-Commerce in Saudi Arabia, and both in 2010. | Research in M-Commerce (in the Saudi Arabian context) is quite limited; it is necessary to conduct additional research studies, so as to reach reliable (and conclusive) information on the factors affecting the evolution of M-Commerce in Saudi Arabia. A study by Al Hosni et al. (2010) presented a review of past studies, and so this implies a limitation (as far as quantitative analysis goes). Also, the study’s results are limited because they do not focus exclusively on Saudi Arabia, but on the Middle East as a whole.

Table 9: M-Commerce limitation/motivation and future recommendation in the Saudi Arabian context

The first of the studies that were reviewed in M-Banking area was founded on data gathering (on 330 mobile banking users) and on the DOI theory, the latter being used as a baseline for investigating the factors that influence the adoption of M-Banking in Saudi Arabia. Al-Jabri and Sohail (2012) found that the observability of the systems by users, the compatibility of the systems with other technologies and the advantages that the systems offer significantly influence their adoption by users. Also, this study demonstrated that there was no significant correlation between system complexity and trialability, and user adoption. The second, conducted by Alber (2011), entailed a survey that was applied to 6 out of 11 commercial banks in Saudi Arabia in a period of 9 years, from 1998 to 2007. The objective of this study was to investigate the effects that bank expansions had on profit efficiency. Ultimately, the surveys demonstrated that profit efficiency is affected by the following factors: mobile banking availability; automated teller machine (ATM) availability and number of bank branches. The third study, conducted by Abdullah (2009), modified TAM to suit bank customers in Saudi Arabia. This study found that though improving SMS services, banks can significantly reduce costs and improve efficiency. The results of the study have positively contributed to SMS banking in Saudi Arabia as it has enabled the development of M-Banking systems that are easy to use, credible and compatible. Finally, the fourth study utilised a sample size of 150 users, each of which filled out a questionnaire to collect data regarding the adoption of tele-banking technology by bank customers in Saudi Arabia. Al-Ashban and Burney (2001) found that the experience of using tele-banking technology is positively correlated with user adoption. Significant (positive) correlations were also found between education and income level, and user adoption.

Table 10: M-Banking limitation/motivation and future recommendation in the Saudi Arabian context

Indicating to M-Government (Table 8), Abanumy and Mayhew (2005) conducted interviews on IT professionals working in government institutions. A second study, conducted by Al-Solbi and Mayhew (2005), used a quantitative research approach (based on interviews) to investigate the level of e-readiness in Saudi Arabian organisations. The study found that there is a lack of ICT Code of Practice in the public sector, and that there is dependence on US Code of Practice by the private sector. Continuing on the subject of mobile communications security, Alhussain et al. (2010) used a grounded theory methodology (complemented by questionnaires and semi-structured interviews) in finding that successful implementation of biometric technology in M-Government in Saudi Arabia is influenced significantly by user acceptance. In addition, studies conducted by Alhussain and Drew (2012) and Alsenaidy and Ahmad (2012) focussed on M-Government application security, and M-Government implementation, respectively. The first study, conducted by Alhussain and Drew (2012), built on a grounded theory to conclude that...
Personal Identification Numbers (PINs) do not provide high security, as they are vulnerable to guessing. The study goes on to propose the use of a biometric authentication method to provide high security services to citizens. The second study, conducted by Alsenaidy and Ahmad (2012), found that M-Government in Saudi Arabia is currently used to provide government-to-government (G2G) services, government-to-consumer (G2C) services and government-to-business (G2B) services. For Saudi M-Government websites, a designed approach has also been generated, framed and applied based on their desired functionalities (Al-Khalifa, 2011). Almutairi (2011), in Saudi E-Government, reviewed the challenges that the Saudi M-Government may face, and key success factors that the E-Government may follow to strengthen and support their website and mobile services.

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<th>Research limitation/motivation</th>
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<tr>
<td>Compared to M-Commerce and M-Banking, M-Government has received more attention by academics and researchers alike. Since 2000, the literary review identified a total of 8 studies that were made on the subject (in the Saudi Arabian context).</td>
<td>M-Government technology has not yet been well investigated because the Saudi Government has just established their E-Services. Clearly, this subject may require further investigation to find whether citizens are aware of these services. Abanumy and Mayhew (2005) found that the application of M-Government in Saudi Arabia is underdeveloped at best. Very few M-Government applications have been implemented thus far, being limited mostly to SMS alerts. Al-Solbi and Mayhew (2005) found that the country is by no means ready for the development of a complete ICT infrastructure. Alhussain and Drew (2010) found that users do not fully trust the current authentication techniques employed by M-Government applications. Their study suggests that an advanced authentication technique, such as biometric technology, should be implemented in M-Government applications. Alsenaidy and Ahmad (2012) found that such M-Government applications are underdeveloped, and so improvements are in order. Therefore, the government needs to understand how to enhance the utilisation of its M-Government services.</td>
</tr>
<tr>
<td>Mobile Technologies have not yet been sufficiently investigated in the acceptance and use of technology in the Saudi Arabian context.</td>
<td>With the increase of the number of mobile Internet users in the Middle East, especially in Saudi Arabia, as subscriptions to mobile broadband reached 11.5 million at the end of 2011 representing 40.5% of the population (Ethos Interactive, 2012). There is a motivation for future research in Saudi Arabia to test Mobile Technologies such as Mobile Internet, Mobile Commerce, Mobile Banking and Mobile Government.</td>
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Table1: M-Government and Mobile Technologies limitation/motivation and future recommendation in the Saudi Arabian context

In short, it clearly seems that Mobile Internet and Mobile Government technologies have not yet been sufficiently investigated in Saudi Arabia; this motivates this research to be conducted in the context of acceptance and use of technology. Also, UTAUT2 has not yet been widely applied; therefore, applying and extending UTAUT2 on the Saudi Mobile Internet and Saudi Mobile Government technologies will contribute to the field especially that this research will test the validity of the extended theory and present a comprehensive comparison between UTAUT2 and the extended model. In addition to this, reviewing what were topically and theoretically researched in Mobile Technologies in Saudi Arabia will aid this research to generate its own new model.

3.2 The Acceptance and Use of IT/IS in the Middle Eastern context

Based on the extensive literature review, it is observed that the majority of these studies with extensions, modifications and testing have been found with significant limitation as discussed below. In addition, applications with significant potential towards development of countries are also discussed. The statistical analysis phase survey data is a crucial phase to understand the relationship between different factors and their impact on the acceptance as well as intention to use technology.
The statistical analysis, which has a wide scope, provides numerous methods and techniques for analysis. The implementation and comparison of different statistical techniques reflect potential relationship differences among influencing factors. The majority of the literature for TAM, UTAUT, TRA and TPB is focused on the Structural Equation Modelling, Partial Least Squares, Regression and Cronbach Alpha. The implementation and analysis towards the applicability of these models for a specific application using different statistical analysis techniques may reflect diverse reflections for decision makers and management in the context of acceptance and intention to use technology behaviour. The applicability of these models has been studied from western to non-western perspective based on a diverse range of applications.

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<td>The acceptance of emerging technologies outside of the western countries, especially in the Middle Eastern countries is not only challenging but also a risk to business and country due to the strong influence of cultural, social and religious boundaries (Aldraeheim et al., 2013; Alshehri et al., 2012).</td>
<td>Examining the extent to which cultural, social and religious boundaries influence the acceptance of IT/IS; How can the impact of these boundaries be reduced?</td>
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<td>End-users’ behaviour, limitations, their intentions and related influencing factors towards the adoption and use of technology are crucial (Al-Ghaith et al., 2010; Amin and Chong, 2011; Al-Sukkar, 2005; Anderson et al., 2008; Baker et al., 2007; Filimban and Aljahdali, 2010; Sadeghi and Farokhian, 2010; Taherdoost et al., 2012).</td>
<td>Extra analysis for mature understanding, integration and sustainability in order to redefine a new conceptual model to conform to the Middle Eastern context.</td>
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<td>The collection of data samples through surveys, interviews and focus groups has a huge impact towards the testing and validation of hypothesis. The data collected from one city, one group of people or organisation may have a different analysis compared to other multiple groups in the Middle Eastern context (Al-Maghrabi and Dennis, 2009; Al-Sukkar, 2005; Baakeel, 2012; Baytiyeh and Naja, 2011; Alzahrani and Goodwin, 2012; Zolfaghar et al., 2010).</td>
<td>A generalised model is required with consideration of diverse range and calibre of people and wider scope within all the Middle Eastern countries. It is true to say that IT applicability varies from application to application; however, a successful validation of technology acceptance with a broader scope within all the Middle Eastern countries will reflect a potential sustainability of technology for development of developing countries.</td>
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<td>The survey samples in the majority of the literature have considered single take hence single time for collection. As such, data samples collected from patients or students in the summer may have a different response hence the impact on hypothesis testing and validation compared to data collected during the winter (Didarloo et al., 2012).</td>
<td>The analysis based on the collection at different times will help to understand the potential and sustainable trend towards the acceptance of IT services.</td>
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<td>It is observed that the majority of the application selected within the Middle Eastern context is based on E-Learning, E-Banking, E-Government, E-Shopping, Islamic banking, knowledge sharing and many more (Alenezi et al., 2010; Al-Majali, 2011; AL-Harby et al., 2010; Al-Maghrabi et al, 2011; Jahya, 2004; Alajmi, 2012; Ozkan and Kanat, 2011).</td>
<td>There are many applications which require deeper and mature analysis towards the acceptance in the Middle Eastern countries such as Mobile Technologies.</td>
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<td>The limitation and applications discussed in the literature review have huge potential and can play a significant role towards the development of the Middle Eastern countries.</td>
<td>An investigation of influencing factors towards the acceptance of these technologies with wider scope will not only help to boost development but also create diverse challenging research directions.</td>
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Table 12: The Acceptance and Use of IT/IS in the Middle Eastern context limitation/motivation and future recommendation
4 DISCUSSION

According to Venkatesh et al. (2012), in the modern era of Information Technology (IT), primarily in the organisational context, one of the most vital fields of IS studies is to realise, recognise and characterise individual acceptance and use of IT. Based on this type of research as indicated by Venkatesh et al. (2003), a Unified Theory of Acceptance and Use of Technology (UTAUT) was formed by a review and synthesis of eight theories/models of technology use including Social Cognitive Theory (SCT), Motivation Model (MM), Theory of Planned Behaviour (TPB), Innovation Diffusion Theory (IDT), Theory of Reasoned Action (TRA), Combined TAM and TPB (C-TAM-TPB), Technology Acceptance Model (TAM) and Model of PC (personal computer) Utilisation (MPCU) to predict the Behavioural Intention (BI) to use a technology mediated by critical factors and contingencies. Venkatesh et al. (2003) identified Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI) and Facilitating Conditions (FC) as key constructs for UTAUT. UTAUT has been studied by Venkatesh et al. (2012) to generate UTAUT2 in order to tailor the gap found in the consumer use context by developing key additional constructs and relationships related to the original UTAUT conceptualisation. By 2012, up to 500 articles have been published and done in the UTAUT scope and most of them have only covered a subset of the original constructs. Noticeably, adding these changes, especially new constructs affects the theoretical domain of UTAUT positively; nevertheless, no careful and complementary theoretical attention to the context is being researched. Therefore, three new constructs have been integrated into UTAUT represented by Hedonic Motivation (HM) - the fun or pleasure derived from using a technology (Brown and Venkatesh, 2005), Price Value (PV) - users are responsible for the costs and such costs, besides being important, can dominate consumer adoption decisions (Brown and Venkatesh, 2005; Chan et al., 2008; Coulter and Coulter, 2007; Dodds et al., 1991) and Habit (HT) - habit has a direct effect on technology use and/or habit weakens or limits the strength of the relationship between BI and technology use (Venkatesh et al., 2012) that provide new mechanisms such as effect, monetary constraints, and automaticity in order to tailor the gap investigated and contribute to the original theoretical model (Venkatesh et al., 2012).

According to Venkatesh et al. (2012) paper conducted in Hong Kong in the context of consumer use of mobile Internet technology, and published in MIS Quarterly, mobile Internet supports a variety of digital data services that are accessed using a mobile device over different geographic places. Using this service, which is a voluntary decision, enables users to exchange pictures, messages, e-mails, online booking, games, etc. The results show that age, gender and experience are the moderators between HM and BI; however, age and gender are the moderators between PV and BI. And finally, HT has direct and mediated influence on technology use mediated by individual differences represented by age, gender and experience. The paper recommends that future research can be built on UTAUT2 and applied in different countries, age groups and technologies by identifying other relevant factors that may develop the usability of UTAUT. Moreover, further research can include more structural elements of use related to user and tasks (Burton-Jones and Straub, 2006) in order to investigate the explanatory power of BI and habit. For example, the predictive power of habit may increase relative to that of BI when users’ daily tasks are included in the measurement of use, as daily routine tasks are more subject to the influence of habit (Venkatesh et al., 2012). In addition, to help further rule out the Common Method Variance (CMV,) different and objective measures of use can be used for future research as using experiments that manipulate the predictors is also helpful to reduce CMV concerns (Venkatesh et al., 2012). Based on the future research recommendations mentioned above, and according to Goodhue (2007) who claimed that UTAUT is a powerful model, especially when it is extended with relevant constructs as it contributes to the understanding of important phenomena of consumer use of technologies (Bagozzi, 2007), future research motivations can be refined.

The current study will mainly focus on two important concepts of "How UTAUT2 influences the context of consumer acceptance and use of IT", and "How the extended UTAUT2 or the suggested theoretical framework contributes to the field". This research will also outline problems, constructs and relationships related to the theory tested and extended in order to list all advantages and disadvantages presented by a comprehensive comparison. The aim of this study can be summarised as "Evaluating the impact of UTAUT2 and the suggested theoretical framework on understanding the
context of consumer acceptance and use of IT in the Middle East, particularly in Saudi Arabia. Primary and secondary research questions can be identified as follows as: "What is the link between UTAUT2 and the context of consumer acceptance and use of technology?" and "How are UTAUT2's new constructs and relationships affecting the BI and use of behaviour?". The other research questions that will be focused in this study can be identified as "How to efficiently apply UTAUT2 to enhance the organisational understanding of the context of consumer acceptance and use of technology?", "How to extend UTAUT2 with new constructs and relationships to enhance the organisational understanding of the context of consumer acceptance and use of technology?" and "What are the benefits, problems, motivations, fears and recommendations found in applying UTAUT2 and the suggested theoretical framework?". It is important to outline the main objectives that would be accomplished in the current study as "Investigating the link between UTAUT2 and the context of consumer acceptance and use of technology", "Investigating the effect of UTAUT2's new constructs and relationships on BI and use of behaviour", "Understanding the applicability of UTAUT2 to enhance the organisational understanding of the context of consumer acceptance and use of technology", "Tailoring the gap found in applying UTAUT2 by new constructs and relationships to enhance the organisational understanding of the context of consumer acceptance and use of technology" and "Evaluating the applicability of UTAUT2 and the suggested theoretical framework to help in shaping further research". This research study will extend the UTAUT2 existing theory as it will result in the development of a new model based on the Middle Eastern theoretical background reviewed.

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<tr>
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<tr>
<td>In the Middle East, there are only 15 studies out of 90 conducted UTAUT research and 9 of them done in Saudi Arabia.</td>
<td>This indicates that the up-to-date concept of consumer acceptance and use of technology needs to be investigated more in the Middle East.</td>
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<tr>
<td>UTAUT2 has not yet been well tested in the Middle East or widely extended in the field.</td>
<td>Reviewing what were topically and theoretically researched in the acceptance and use of technology will aid future research to test new technologies, to examine the usability of UTAUT2 and to generate its new own model by integrating new constructs, moderators and relationships to the original model. Moreover, testing the validity of the extended theory and presenting a comprehensive comparison between UTAUT2 and the extended model will lead to a better understanding of the acceptance and use of technology.</td>
</tr>
<tr>
<td>UTAUT2 was just found in 2012 and applied on Mobile Internet technology in Hong Kong (Venkatesh et al., 2012).</td>
<td>Conducting research on other technologies will contribute to a better understanding of the concept of consumer acceptance and use of technology in order to identify, modify or determine constructs, relationships or problems related to the applicability of UTAUT2.</td>
</tr>
<tr>
<td>Past studies have indicated the correlations that exist between consumer acceptance and use, and factors that include mobility, security, cost and experience of use (Al Hosni et al., 2010; Al-Khateeb, 2007; Al-Ghamdi and Dasgupta, 2012; Shalhoub, 2006).</td>
<td>There is still a need for a comprehensive understanding of how these factors actually correlate with consumer acceptance and use. The gap that should be tailored lies in the identification of the factors that affect consumer acceptance and use of IT, as well as the correlation that exists between them.</td>
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<tr>
<td>Mobile Internet technology has never been researched in Saudi Arabia, and Mobile Government technology has not yet been well investigated because the Saudi Government has just established their E-Services.</td>
<td>The implementation of UTAUT2 on Mobile Internet in Saudi Arabia will be a new experience not only for the Saudi Arabian context but also for the worldwide context of acceptance and use of technology. In addition, applying UTAUT2 on Mobile Government technologies will be a contribution, since it has never been done before.</td>
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Table13: Main Limitations and Corresponding Future Research Directions
5 CONCLUSION

The exploration of technologies tested in the past studies, theories, methodologies, findings, obstacles, challenges, success factors, limitations and recommendations provides a basis for valuable future research in the acceptance and use of technology. Based on the extensive literature, only a limited number of papers researched E-Government acceptance and usage in Saudi Arabia as the government has recently established eservices; therefore, they may require further research to find whether citizens are aware of these services. Although there is no research which specifically concentrates on Internet acceptance, Internet and E-Government subjects have been widely covered. With the increase in the number of Mobile Internet users in the Middle East, especially in Saudi Arabia as subscriptions to mobile broadband reached 11.5 million at the end of 2011 representing 40.5% of the population (Ethos Interactive, 2012), conducting further research in Mobile Technologies is a motivation that will lead to a better understanding of these technologies as they have not yet been well investigated. It also seems that M-Internet technology has never been studied. According to the previous studies, UTAUT2 has not yet been well tested in the Middle East or widely extended in the field. Therefore, the implementation of UTAUT2 on the acceptance and use of technology in the Saudi Arabian context will be a new experience not only for the Saudi studies but also for the worldwide context. The future research model can be redefined to conform to the acceptance and use of technology in the Middle East and Saudi Arabian context. This paper reviewed several previous studies conducted in the acceptance and use of technology in the Saudi Arabian context. It will strongly contribute to the field and aid future research by finding what has been topically and theoretically studied before investigating new technologies and conducting further research based on previous limitations and recommendations. In addition, this study will help in eliminating gaps that exist in the IT consumer acceptance and use context by recommending new IT/IS that can be adopted, and identifying additional constructs, factors, mediators and relationships related to theories that can be applied or extended on IT/IS as a new model.

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