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Factors Affecting the Citizen's Intention to Adopt E-government in Saudi Arabia

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***Abstract*—**This paper discusses E-government, in particular the challenges that face its development and widespread adoption in Saudi Arabia. E-government can be defined based on an existing set of requirements. E-government has been implemented for a considerable time in developed countries. However, E-government services still face many challenges in their implementation and general adoption in Saudi Arabia. In addition, the literature review and the discussion identify the influential factors, such as quality of service, diffusion of innovation, computer and information literacy, culture, lack of awareness, technical infrastructure, website design, and security, that affect the citizens' intention to adopt E-government services in Saudi Arabia. Consequently, these factors have been integrated in a new model that would influence citizen to adopt E-government services. Therefore, this research presents an integrated model for ascertaining the intention to adopt E-government services and thereby aiding governments in accessing what is required to increase adoption.

***Keywords*—**Adoption, citizens' intention, E-government, G2C, influential factors.

I. Introduction

As information and communication technologies (ICT) rapidly develop, coupled with considerable improvements in digital connectivity, governments are reassessing the way they work and interact both internally and with external organizations [1], [2]. This technology has encouraged the government's organizations and affiliations to reconsider their internal and external relations and transactions. Therefore, in order to succeed and build for the future, the administrative processes of government are being transferred to electronic systems. Governments worldwide are considering establishing an electronic approach (E-government) to government organizations and agencies in order to provide and facilitate many services to people anywhere and at any time, and to replace traditional routine procedures. Within the paradigm of human and social development, the United Nations [3] has a conceptual framework for E-government programs. In the United Nations context, E-government is achieved when a state uses ICT to improve the availability of information to its citizens. In order to achieve this, the capacity and readiness of the public sector have to increase in the areas of a country's technological and telecommunications infrastructure and the level of its human resources development [4].

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A. E-government in Saudi Arabia

The Saudi government launched the YESSER Program, the country's first national E- government strategy, in 2005 [5]. The aim of this initiative is to create user-centric electronic initiatives that focus on improving government services to the public sector. In addition, the vision of the Kingdom of Saudi Arabia is to adopt and activate communication and IT systems which led to realize an IT community and a digital economy [6]. The government of Saudi Arabia has taken steps to develop business process and disseminate the concept of e-services in various government agencies in order to realize their vision [6]. Furthermore, it has been announced by Saudi E-Government Program [6] that to achieve the objectives, a set of promising ambitious plans and strategies have been adopted by the Saudi Arabian government. The plans for developing and implementing the E-government program has been sat and have to actions, which is the first plan has took a place from 2006 to 2010, and the second is progressing from 2012 to 2016. Additionally, the E-governance strategy will provide citizens with access to all government-related services and information. This will enhance the accountability of the public sector in Saudi and it is being implemented in all ministries in the country. This Saudi initiative to implement E-government has been criticized for not being feasible and for having transaction systems limited to business [7].

B. Adopting New Technology

Adopting new technology is required to success in implementing E-government in developing countries, Saudi Arabia for insistence [8]. The success of the implementation of the E-government is dependent not only on the government support, but also on willingness to accept and adopt E-government services by the citizens [9]. Although the government decision makers are keen on providing services using the traditional ways, they also need to understand the factors that would encourage their citizens to use the electronic service delivery channels [9]. In fact, the research on exploring factors that would encourage citizen to adopt E-government services in developing countries is not enough [9]. Therefore, one of this research's aims is identifying the factors that affect the citizens' intention to adopt E-government services.

II. Literature Review

A. E-government

To define E-government from a single perspective is relatively easy, but defining E-government in a way that suits

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everyone's view or needs is a significant challenge. Meng Seng, et al. [10] noted that although E-government as a term has become known across the world, there is evidence of insufficient consensus on its meaning, particularly regarding the main features of E-government [10], [11]. E-government can be defined in different ways. For instance, it can mean everything from just looking up information to using an online service, such as renewing a passport [3]. In addition, the use of information technology to enable and increase efficiency is key to E-government, while providing services and information to citizens, employees, businesses and government agencies [12]. A different approach is to define E-government as using the Internet as a tool for information and communications technology (ICT) to accomplish better government [13], [14].

A wide range of different definitions from researchers have been identified; while everyone has a different view and requirements, most of them share the view that E-government incorporates ICT as one of its major elements.

In this paper, E-government is defined as a matrix of stakeholders: government to government, government to business and government to citizens, using information and communications technology to deliver and consume services. E-government has the objective of saving money, time and effort with increased efficiency, with due consideration for information security and privacy.

B. Citizen Adoption

Adoption is an important aspect for the success of E-government initiatives in developing countries [8]. However, growing interest in E-government raises the question of how governments can increase citizen adoption and use of their online government services [15]. To date, there has been little research exploring factors that determine the adoption of E-government services by citizens in developing countries, especially in the Arab world [9], [16]. Moreover, Dong et al. [17] point out that E-government researchers often do not consider the adoption of E-government. They also make the point that, although there is enormous potential for online government services, citizens are not adopting them [15]. Furthermore, Carter and Belanger [12] agreed with other researchers that, although numerous studies have analysed user adoption of electronic commerce [18]-[20], to date, no study has identified the core factors that influence citizen adoption of E-government initiatives. According to Colesca [21], many studies focused on the citizen adoption of E-government services suggest that trust [22], security [23] and transparency [24] are major issues for E-government adoption. Based on Margetts [25] cited by Yonazi et al. [8] high adoption of these initiatives increases the chance that E-government will facilitate social and economic benefits to citizens.

In the case of Kuwait, the increasing use of ICT by government departments resulted in the creation of an IT infrastructure capable of supporting E-government services [16]. User acceptance of IT is deemed a necessary condition for the effective implementation of any IT project [9], [26]. Adoption comes after direct experience with the technology and after an individual has decided to accept the technology [9], [27]. A number of studies have investigated the adoption of E-government services in developed countries [9], [28], whereas relatively little has been undertaken in developing countries [9], [16]. Successful implementation of adoptable E-government initiatives in that context requires complex customization between the technology and implementation context in developing countries [8], [29]; the result in designing citizen-adoptable E-government initiatives is still a challenge to many developing countries' governments [8]. AlAwadhi and Morris [9] conducted a study in Kuwait to explore factors that affect the adoption of E-government services. The result identified the main factors that could influence citizens to adopt E-government including usefulness, ease of use, cultural and social influences, face-to-face interaction, gender issues, technical issues, lack of awareness, trust in the Internet and cultural differences.

Although these factors influence Kuwaiti citizens to adopt E-government services, there is no evidence that these factors can influence Saudi citizens. However, the culture is similar between Kuwait and Saudi Arabia. Additionally, Alshehri et al. [30] has identified some general factors for E-government in Saudi Arabia. Therefore, in order to determine which of all these factors can influence Saudi citizens and whether there are other factors that have not been mentioned, an investigation is going to be carried out among citizens of Saudi Arabia and selected Saudi organizations.

C. Models Used to Measure Adoption of New Technologies

To identify the influential factors, different researchers' models and contributions have been reviewed includes Technology Adoption Model (TAM) by Davis [31], Diffusion of Innovations Model (DOI) by Rogers [32] and Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh et al. [27]. The other models reviewed where, Trustworthiness by [33], model for citizen adoption by [34] and. Rehman and Esichaikul [35] delivered a third model of citizen adoption based on integrated models adapted from TAM, DOI and UTAUT. Reviewing these models allowed us to identify the factors that may influence citizens in Saudi Arabia to adopt E-government

III. Research Methodology

Based on the literature review, this discussion will consider, first, the challenges facing E-government implementation and development in Saudi Arabia, and secondly, the factors that influence citizens' intention to adopt E-government services; in order to answer the following key questions: (i) What are the challenges or barriers to implement and develop E-government in Saudi Arabia? (ii) What are the influential factors to be integrated in a model for implementing and developing E-government in order to be adopted by citizen?

A. Factors Influencing Citizens' Intention to Adopt E-government Services in Saudi Arabia

The initial question for this research and investigation is:

How can the Saudi government overcome challenges to help its citizens adopt E-government? To answer this question and to help people adopt E-government services, there are some factors that should be credited to government requirements. Table I presents the influential factors from the literature review in 10 categories. Although the identified factors are not yet proven to meet the needs of Saudi citizens, it will be used as bases to examine some well-known models and theories.

TABLE I
FACTORS INFLUENCING CITIZENS TO ADOPT E-GOVERNMENT SERVICES

No	Factors	
1	Technical Infrastructure	
2	Computer and Information Literacy: • Age.	• Gender. • Education.
3	Lack of Awareness	
4	Security Issues Transaction Security.	Information Security. Perceived Risk.
5	Privacy Issues	
6	Trust Issues • Trust in Government.	• Trust In Internet.
7	Quality of Service Service Quality. Reliability.	Availability. Speed of Delivery. Information Quality.
8	Culture	
9	DOI Compatibility. Complexity.	Image. Relative Advantage.
10	Website Design Perceived Usefulness. Perceived Ease of Use.	Usability. Accessibility. Multi-lingual Website.

IV. THE RESEARCH MODEL

Based on what has been discussed previously, a new model will be addressed by adapting and integrating the critical factors that have been mentioned by other authors. Fig. 1 shows the new model – higher level. The addressed higher level model contains the intention to use E-government services and E-Readiness.

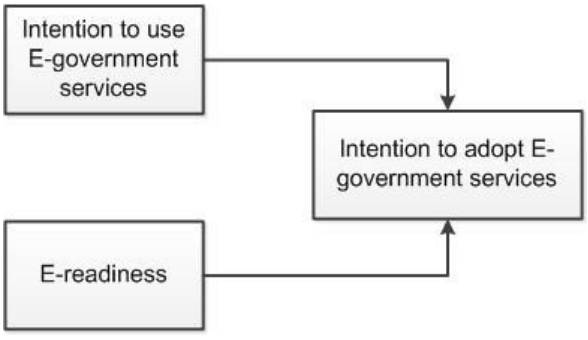


Fig. 1 A high level overview of an Integrated Model for Citizen Adoption of E-government Services

These two main blocks, which are the intention to use E-government services and E-Readiness, have factors that affect the adoption of E-government services. The intention to use E-government services, which has been classified as citizens' concerns, includes Trust, Privacy, Security, Culture and Website design while E-Readiness has Quality Services, DOI, Computer and information Literacy, Culture, Lack of Awareness, Technical Infrastructure and Security, and it is classified as government's responsibility. In this paper only the breakdowns of the E-readiness block as shown in Fig. 1 are presented in the next sections and it is shown in Fig. 2. In the breakdown, the factors have been categorized in order to make the validation easy and accurate.

A. Quality of Service

Quality of service has been suggested to play an important role in online services [35]. To encourage citizen to adopt E-government services, it is important to the government to provide high quality of service and high quality of information with the objective of the speed of delivery, with due consideration of information reliability and availability [35].

B. Diffusion of Innovation

This element of the model is based on Roger's [32] model of Diffusion of Innovation. Subsequently Carter and Belanger [36] have been made a modification by adopting compatibility, relative advantage and complexity, and excluding trialability and observability to replace it by image.

C. Computer and Information Literacy

Literacy as applied to ICT is defined as whatever a person needs to be able to use (and know about) computers, while the ability to use information, or possibly the possession of knowledge of information is information literacy [37]. The computer and information literacy are affected by the level of education that citizen held, age and gender [2], which all bar the citizen to adopt E-government service [38].

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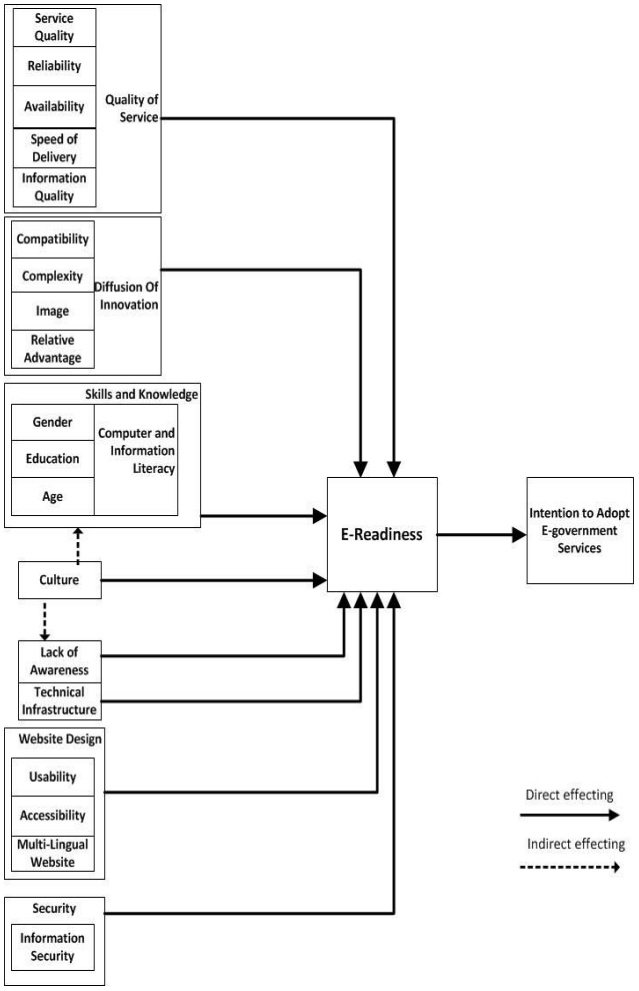


Fig. 2 A breakdown of the E-readiness from the high level overview of the Integrated Model for Citizen Adoption of E-government Services Fig. 1

D. Culture

Culture has impacts on the citizen intention to use E-government services, that including culture influences, culture awareness and national culture [39]. It has been defined culture as "values, beliefs, norms and behavioural patterns of a group – people in a society for national culture, staff of an organization for organizational culture, specific professions for professional" [40]. Akkaya et al. [39] state that many researchers have recognized the importance of considering cultural characteristics in online services.

E. Lack of Awareness

Awareness refers to how a person understands the activities of others, which provides a context for his own activity [41]. To influence citizen to adopt E-government services, the government should increase the awareness of their citizen. It has been found that awareness is one of the barriers that affect the adoption of E-government services [17], [34]. According to Baker and Bellordre [41] a major concern related to the deployment and use of new technologies is a lack of awareness that a given technology exists, or the citizen could benefit from using the new technology**.**

F. Technical Infrastructure

Technical infrastructure includes LAN (local area network) design and installation, cooperation scope's determination in the corporate WAN network (Internet, Intranet), technical parameter specification by using computers as workstations and servers, selection of operational system environment and database platform [41]. A study by AlAwadhi and Morris [42] found that most of the participants were worried about the technical issues. AlAwadhi and Morris [42] states that the finding give a clear view that technical infrastructure is important to influence citizen to adopt E-government services. In addition, Al-Sobhi et al. [2] states that reliable and integrated technical infrastructure could be the difficult parts that face government, especially in developing countries, to obtain a higher level of E-government services that can influence citizen to adopt E-government services. Reference [2] suggests that governments should provide a budget to build strong technical infrastructure in order to encourage citizen to adopt E-government services.

G. Website Design

Researchers have suggested that the design of an E-government website may encourage citizens to use the services and make a good impression to increase citizens' repetition [37]. Website design including perceived usefulness, perceived ease of use, usability, accessibility and Para-lingual website are the main factors that governments should focus on to influence citizen to adopt and use E-government services [37].

H. Security

Security can be defined as the protection of information or systems from unsanctioned intrusions or outflows [43]. Lack of security is one of the main factors that affect the intention to adopt E-government services which have been identified in most studies [43]. In addition, transaction security is a critical for users when making online activities [44]. Furthermore, information security is defined as "the subjective probability with which consumers believe that during information transit or storage their personal information will not be viewed, stored or manipulated by inappropriate parties, in a manner consistent with their confident expectations" [45].

V. Conclusion

Currently the World Wide Web is becoming a tool of daily life, where people prefer online services as a quick and easy way of carrying out their daily activities such as reading newspapers, paying bills, etc. Due to this approach, proposing and developing electronic services has become a high priority in most countries. Moreover, since the rapid development in information and communication technologies (ICT) and the significant improvements in digital connectivity, adoption of E-government services by citizens is the concern of many governments. Therefore, this research has considered how to encourage citizens to adopt E-government services and address an integrated model for citizen adoption of E-government services.

Previously, we have conducted a literature review that has identified the key drives and factors that have to be considered in the development of any model. The model has been constructed following a review of approached to determine technology acceptance metrics.

Currently work is ongoing to validate the integrated model by using a triangulation method which includes focus group and questionnaires with citizens, and interviews and questionnaires with government officials in Saudi Arabia.

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