

TOWARDS AN INTEGRATED MODEL FOR CITIZEN ADOPTION OF E-GOVERNMENT SERVICES IN DEVELOPING COUNTRIES: A SAUDI ARABIA CASE

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Abstract

This paper considers the challenges that face the widespread adoption of E-government in developing countries, using Saudi Arabian our case study. E-government can be defined based on an existing set of requirements. In this paper we define E-government as a matrix of stakeholders; governments to governments, governments to business and governments to citizens using information and communications technology to deliver and consume services. E-government has been implemented for a considerable time in developed countries. However E-government services still faces many challenges their implemented and general adoption in developing countries. Therefore, this paper presents an integrated model for ascertaining the intention to adopt E-government services and thereby aid governments in accessing what is required to increase adoption.

Keywords-component; *E-government; Adoption; citizen; Citizen Adoption; Adoption model; ICT; G2C.*

1 Introduction

Nowadays, the World Wide Web (WWW) has become a necessity and indispensable tool in the daily life of people worldwide [1]. Hence many people prefer the on-line approach to achieving their daily tasks and other activities such as reading newspapers, paying bills, etc. In parallel with the rapid development in information and communication technologies (ICT) and the significant improvements in digital connectivity, government departments are being made to reconsider their internal and external relations, and transaction processes [1]. However, this technology has prompted the government's organizations and affiliation to reconsider their internal and external relations and transaction. Therefore, and in order to

succeed and build for the future the administrative processes of government, government have been transferred to electronic systems. Governments worldwide are thinking of establishing an electronic system to the government organizational and agencies (E-government) in order to provide and facilitate many services to the people anywhere and anytime to overcome the tedious traditional routine procedures, based on the United Nation [2] conceptual framework of the United Nations E-government program. This programme is embedded in the paradigm of human and social development. According to [2]:

“E-government in this context encompasses the capacity and the willingness of the public sector to deploy ICT for improving knowledge and information in the service of the citizen. In addition, E-government Development is a function of not only a country's state of readiness but also its technological and telecommunication infrastructure and the level of its human resource development, among other factors, and at a minimum should be based on the level of all three”.

The Saudi government has launched the YESSER Program, the country's first National E-Government strategy [3]. The aim of this initiative is to create user centric electronic initiatives that focus on improving the government services to the public sector. The E-Government strategy will provide the citizen's access to all government related services and information. This will enhance the accountability of the public sector in Saudi Arabia and it is being implemented in all county's ministries. This Saudi initiative to implement E-government has been criticized for not being feasible and that the transaction systems are merely limited to business.

The structure of the paper is as follows, Section **Error! Reference source not found.** presents the results on an extensive literature, Section **Error! Reference source not found.** compares the electronic approach to government with current

practice. Section 4 reviews models previously used to assess adoption, Section **Error! Reference source not found.** considers the mode that will be applied in this work, and final Section **Error! Reference source not found.** presents the conclusion to the paper.

2 Literature Review

In this section, a literature review is presented. The review primarily concentrates on the definitions for E-government, E-government's drivers, challenges facing E-government and introducing the adoption of E-government.

2.1 E-government

To define E-government from a single can be considered to be relatively easy, but defining E-government in general which can suit everyone's view or needs is almost impossible. Based on the work by Meng Seng, *et al.* [4], it has been noted that although E-government terms have become a buzzword across the world, there is evidence of insufficient or a lack of consensus on the meaning of E-government, especially regarding the main characteristics of E-government [4]. E-government can be defined in different ways. For instance, E-government has been employed to mean everything from 'electronic government services over the Internet' to 'exchange information and services with citizens, businesses, and other arms of government' [2]. In addition, E-government can be defined as the use of information technology, especially telecommunications, to enable and improve the efficiency with which government services and information are provided to citizens, employees, businesses, and government agencies [5], or it can be E-government refers to the use of information and communications technology (ICT), and specifically the Internet, as a tool to achieve better government [6].

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

2.2 E-government Drivers

The drivers for E-government are still being widely discussed in the literature. Some researchers indicate that there are only three drivers which are Government to Government (G2G), Government to

Business (G2B) and Government to **Citizens** (G2C) [7], **while** [5, 6, 8, 9] identify a new driver which is Government to Employee (G2E). In G2E the emphasis is on facilitating the management and internal communication of the civil service with the aim of moving toward a paperless E-office. In addition, according to Ndou [9], for most researchers G2E is subsumed into the G2G interaction. However, Ndou [9] does acknowledge that as employees are seen as internal customers, in a customer-centric organization, hence in the future G2E may need to be considered separately. The three most widely recognized drivers are G2G, G2B and G2C, and are considered in the following sections. G2E is currently omitted, as it is considered internal to government and does not directly impact on citizens.

2.2.1 Government to Government

Government to Government (G2G) represents the infrastructure of E-government in which governments (federal, state and local) incorporate their internal systems and procedures into a central system [7, 10]. Furthermore, Fang [8] states that one of the effects of G2G is that it allows government departments or their executive to collaborate using a large database, which will at least have an impact on efficiency and effectiveness in their exchanges and commodities. In this discussion we define an executive agency is part of a government department that is managerially and budgetary separate in order to provide and eclecticfunction, example's within the UK include Driver and Vehicle Licensing Agency and the UK Debt Management Office. The main aim of the G2G sector is to facilitate processes between inter-government organizations by restructuring collaboration and coordination [7, 10]. According to Alsaghier, *et al.* [10], based on the work of [7], the motivation behind G2G E-government improves the consistency of sharing data, resulting in increased efficiency, a reduction in transaction costs, an increase in the speed of transitions and a reduction in the number of people needed to complete a task. Examples of the G2G sector include E-Identity, E-Security Services, Electronic Document Management and Process Management Services [10].

2.2.2 Government to Business

Government to Business (G2B) initiatives receive a significant amount of attention, in part because of the high enthusiasm of the business sector and the potential for reducing costs through improved procurement practices and increased competition [7]. According to Fang [8], G2B actively drives E-transaction initiatives such as e-procurement and the development of an electronic marketplace for government purchases; and carries out government

procurement tenders through electronic means for exchange of information and commodities, and sale of goods and services. The G2B sector deals primarily with procurement of products and services [7, 10]. The main application of G2B E-government is E-procurement which allows government agencies to gain the benefits realized in the private sector through electronic means [8, 10]. According to Alsaghier, *et al.* [10], FedBizOpps.gov website is an example of G2B, which is administered by the General Services Administration (GSA) and has been established by the United States government as an independent agency to accomplish and support basic functions of federal agencies. In addition, FedBizOpps.gov is designed to serve as a central location for agencies to post procurement notices [10].

2.2.3 Government to Citizen

Government to Citizen (G2C) provides the momentum to put public services online, in particular through electronic transaction delivery for the offer and exchange of information and communications [8]. G2C refers to all relations between citizens and the government over an electronic medium [10]. According to Fang [8], based on the work of [7], G2C E-government is designed to facilitate citizen collaboration with government and is perceived to be the primary goal of E-government. Citizens can benefit from E-government services. Furthermore, using G2C E-government services, citizens' transactions with government, such as booking a driving theory test, can be less time consuming and easier to complete [10]. Over the next decade, the demand for E-government services is expected to grow considerably as young people – who are now living in an information environment with personal computers, including an internet connection as a routine presence in their life – become adults [7, 10]. Although many examples of the G2C sector can be found at the local and state level, there are also examples at the federal level [7]. One example of the G2C initiative is epassport.gov.sa, which is a new Saudi governmental website that offers a single point of access for citizens to allow them to give permission to their dependents to travel who is underage. Meng Seng, *et al.* [4] identified two categories: citizen direct benefits (tangible) and citizen indirect benefits (intangible).

Examples of direct benefits that can be obtained from applying E-government are:

- Saves user of the service travel parking and postage costs as well as, travel time
- Reduces the number of visitors to government offices

- Decreases face-to-face interaction with general enquiries, leaving more time to deal with specific enquiries
- Prevents long visitor queues
- Provides downloadable forms and documents round the clock
- Quicker response to enquiries

Indirect benefits, which can be found in most well designed electronic services medium, include:

- User friendly and easy to use
- Featured with disability functions
- Easy to navigate
- Available most of the time
- Security and privacy
- Customer care
- Keep information updated
- Appreciate customer feedback
- Use easy language
- Reduce bureaucracy
- Increase customer retention

2.3 Challenges facing E-government

To develop any system or framework, such as E-government, that is capable of benefiting private and public organizations, results in a number of challenges for the different stakeholders, both internal and external [1]. Furthermore, and in order to build E-government, there are some barriers facing implementation which should be considered. Therefore, it is important to find out what these challenges and barriers are and how we can solve or avoid them. Although sometimes barriers cannot be avoided, we can amend our framework to flow around them without facing them. The most common barriers, which other researchers identified include: trust, privacy, security, computer and information literacy, culture, authentication, technical infrastructure, accessibility, availability and E-government services adoption. These barriers are explored in more detail in the next section.

2.4 Adoption

Adoption is an important aspect for the success of E-government initiatives in developing countries [11]. However, growing interest in E-government

raises the question of how governments can increase citizen adoption and use of their online government services [12]. 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 [13, 14]. Moreover, Dong, *et al.* [15] note 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 these [12]. Furthermore, Carter & Belanger [5] agreed with other researchers that, although numerous studies have analyzed user adoption of electronic commerce [16-18], to date, no study has identified the core factors that influence citizen adoption of E-government initiatives. According to Colesca [19], many studies focused on the citizen adoption of E-government services suggest that trust, security and transparency are major issues for E-government adoption. High adoption of these initiatives increases the chance that E-government will facilitate social and economic benefits to citizens [11]. In Kuwait the increasing use of ICT by government departments resulted in creating an IT infrastructure capable of supporting E-government services [13]. User acceptance of IT is deemed a necessary condition for the effective implementation of any IT project [14]. Adoption comes after direct experience with the technology and after an individual has decided to accept the technology [14]. A number of studies have investigated the adoption of E-government services in developed countries [14], whereas relatively little has been undertaken in developing countries [13, 14]. Successful implementation of adoptable E-government initiatives in that context requires complex customization between the technology and implementation context in developing countries [11]; the result in designing citizen-adoptable E-government initiatives is still a challenge to many developing countries' governments [11].

In section 4 previous adoption models will be discussed in order to introduce a new integrated model for the citizen adoption of E-government services.

3 E-government challenges

Following the literature review we are now able to consider three aspects of E-government. Firstly, the key difference between electronic and non-electronic systems. Two scenarios have been developed to give a clearer understanding. Secondly, the challenges which are facing E-government implementation in Saudi Arabia are discussed, named and finally the challenges which are facing E-government adoption among citizens.

3.1 Electronic compared with paper based systems

In the daily life, there are enormous amount of services that are offered and consumed by government and commercial organizations. These services can be consumed by using either a non - electronic systems (typically paper based) or using an electronic system as found in E-government. However, as will be discussed, there will be benefits and drawbacks between using none electronic and electronic.

Figure 1 shows the communication of how services and transactions are delivered and consumed in none electronic procedure. Figure 2 presents how the flow of transaction in the electronic system. To make this clear, two scenarios have been written: making a passport application and school communications to parents and pupils have been chosen as examples.

3.1.1 Scenario 1: Passport application

Passport application, in the paper based approach the applicant obtains an application form from the passport office, completes the form, has their picture taken and witnesses, signs the form prior to submitting it to passport office with the fee and supporting documentation. This process takes time and effort as well as being prone to error in the completion of the complex form. In addition, the staff who receives the application might not be able to deal with application if the applicant's has not completed a section correctly.

Using the E-Government approach the process can largely be undertaken from the applicants home. The applicant completes the application form provided by the Identity and Passport Service (IPS) on line, this ensure that all the sections are completed, and undertakes the initial checks (e.g the post code refers to the address etc). The form is then printed and returned to the applicant for signature. Once signed the form, documents, photographs can then be submitted via a Post Office.

One further advantages of this process in the UK, is that the photograph and signature held by the IPS, which has been fully checked and verified can be used for other services, for example the renewal of a driver's license, can be completed totally on line, with no separate submission of a paper signature or photograph.

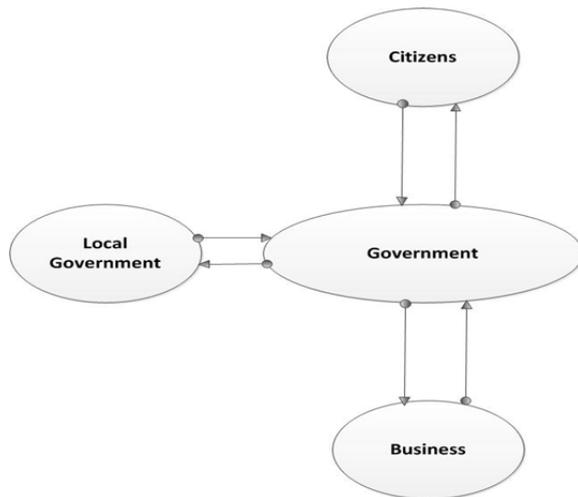


Figure 1. Transactions in Conventional Government

3.1.2 Scenario 2: School communications

School communications (e.g. calendars, letters, permission slips, end of term reports), in paper based schools are usually send home with the children during the school year. This route risks loss (either accidental or deliberate) by the pupil. If this information is lost, it will cause problems firstly for the parents secondly for the pupil. This means, for example, if there is a requirement to visit the school and the parents do not know it might put them in trouble when they have to work full-time or having an important meeting. Moreover, a paper based system costs money by printing paper and is not environmentally friendly. In contrast, in electronic system, parents can find all the schools' calendars letters by accessing the school's electronic portal. This help parents to track their children's progress and update their information at any time they want. In many schools in the UK this has been taken further, with the pupils using the system to receive homework, teaching material and other support.

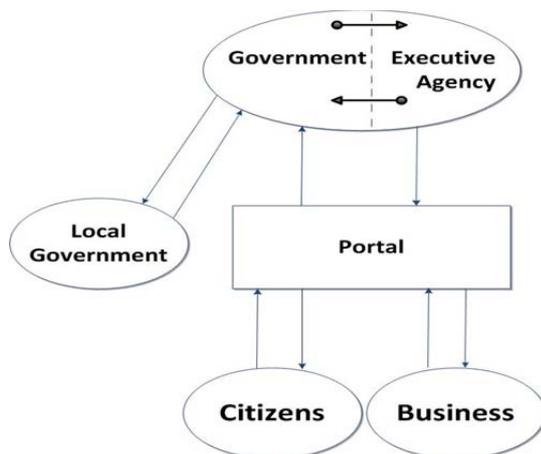


Figure 2. Electronic transactions (E-government)

3.2 Challenges preventing E-government introduction in Saudi Arabia

In Section 2, we showed that many researchers have identified challenges that facing E-government implementation and development in many countries either developed or developing countries. In addition, each country, state, city or even an organization has challenges and barriers. Some of these challenges are common such as security, privacy and trust while there are other challenges different from county to country, city to city, organization to organization, or even from department to other department in one organization. For instance, culture in Asia is not as in Europe. Therefore, Saudi Arabia E-government, for instance, has challenges and barriers which some of these challenges have been mentioned by other researchers. The question here is:

“Can Saudi Arabia E-government overcome these challenges in order to develop the Saudi's E-government”.

To answer this question, some of the relevant challenges, which have been mentioned by researchers, include technical issues [20], trust [1], privacy and security [1], computer and information literacy [1], culture [21], technical infrastructure [21], accessibility and availability [1], and establishing an integrated E-government infrastructure [1].

3.3 Challenges facing E-government adoption in Saudi Arabia

In order to start this research and investigate, a question should be asked which is

“How can Saudi's government overcome these challenges to help citizens to adopt E-government?”.

To answer this question and help people adopting E-government services, there are some factors should be credited to government's requirements. These factors can be found by investigation and conducting a study or survey to find challenges that facing citizen adoption and how overcome these challenges. In the citizen adoption, [22] mention factors influencing the adoption of E-government services which have been founded by conducting a study in Kuwait. Kuwait is one of the Gulf nation countries and there are many similarities between Saudi Arabia and Kuwait including culture, religion, geographic, resources, etc. In addition, some factors that facing citizen's adoption which has been mentioned by other researcher based

on their countries and still not investigated yet in Saudi Arabia are trust, computer literacy, authentication, risks, accessibility and availability, and usability [1].

4 Previous Models used to measure the adoption of new technology

There are three common models to measure the acceptance of a new technology that researchers have been used it to propose a models of citizen adoption. The three models are Technology Adoption Model, Diffusion of Innovations and Unified Theory of Acceptance and Use of Technology. Trustworthiness by [23] is another model which has been used to measure the intention of use a new system by citizens. Trustworthiness is referred to the confidence's perception in the reliability and integrity of electronic marketer [5, 23].

4.1 Technology Adoption Model

Davis [24] has proposed a model that can measure how far people can accept or reject a new technology. Technology's adoption depends on two basic attributes; Perceived Usefulness and Perceived Ease of Use [24, 25]. Davis [24] defines perceived usefulness as "the degree to which a person believes that using a particular system would enhance his or her job performance". In contrast, perceived ease of use is defined as "the degree to which a person believes that using a particular system would be free of effort" [24]. The intention to use the system is determine by perceived usefulness and perceived ease of use [24, 25].

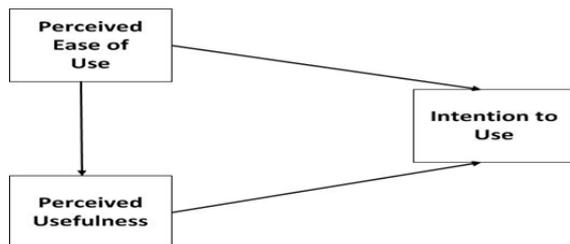


Figure 3. Technology Acceptance Model data from [24, 26].

4.2 Diffusion of Innovations

Rogers [27] has addressed a theory called Diffusion of innovations (DOI). Diffusion is defined as "the process by which an innovation is communicated through certain channels over time among the members of a social society" while "an idea, practice or object that is perceived as new by an individual or other unit of adoption" refers to an innovation [5, 27]. Diffusion of innovations model is a common model used to explain user adoption of

new technologies in IS research [5]. DOI consist of relative advantage, complexity, compatibility, trialability and observability. Rogers [27] defines these attributes as follows [5]:

4.2.1 **Relative advantage** is "the degree to which an innovation is seen as being superior to its predecessor".

4.2.2 **Complexity** is "the degree to which an innovation is seen by the potential adopter as being relatively difficult to use and understand".

4.2.3 **Compatibility** refers to "the degree to which an innovation is seen to be compatible with existing values, beliefs, experiences and needs of adopters".

4.2.4 **Trialability** is "the degree to which an idea can be experimented with on a limited basis".

4.2.5 **Observability** refers to "the degree to which the results of an innovation are visible".

4.3 Unified Theory of Acceptance and Use of Technology

The Unified Theory of Acceptance and Use of Technology (UTAUT) has been presented by Venkatesh, *et al.* [28]. It consists of five main constructs including performance expectancy, effort expectancy, social influence, facilitating conditions and Behavioral Intention that play an important role as direct determinants of usage behavior and user acceptance [28]. According to Venkatesh, *et al.* [28] these constructs are influenced by gender, age, voluntariness, and experience. Venkatesh, *et al.* [28] has identified the four constructs as follows:

4.3.1 **Performance expectancy** is "the degree to which an individual believes that using the system will help him or her to attain gains in job performance".

4.3.2 **Effort expectancy** refers to "the degree of ease associated with the use of the system".

4.3.3 **Social influence** is "the degree to which an individual perceives that important others believe he or she should use the new system".

4.3.4 **Facilitating conditions** are "the degree to which an individual believes that an organizational and technical

infrastructure exists to support use of the system”.

5 The Research Model

In order to build a new research model three common models have been discussed in the previous section, and in this section different authors' models and contributions, which have been addressed based on these common models, are going to be presented.

5.1 Model of TAM, DOI and Trustworthiness by Carter & Belanger

Carter & Belanger [5] proposed a research model based on Technology Adoption Model (TAM), Diffusion of Innovations (DOI) and Trustworthiness. Compatibility, Relative advantage and Complexity have been adopted from DOI, while Trialability and Observability have been excluded and replaced by image [5]. Carter & Belanger [5] has been adopted Perceived Usefulness and Perceived Ease of Use from TAM. It has been noted that perceptions of trustworthiness could influence the intention of to use E-government services [26]. Trustworthiness refers to *“the perception of confidence in the electronic marketer’s reliability and integrity”*[23], and has been adopted and included in the author’s research model.

5.2 Model of barriers to E-government Citizens’ Adoption by Alnuaimi, et al.

AlNuaimi, *et al.* [25] presented another research model for citizen adoption which is based on TAM, DOI and Unified Theory of Acceptance and Use of Technology (UTAUT). This model presents the citizen adoption in Abu Dhabi government by [25]. The model has 11 independent variables and has been used to examine the impacts of these variables on the use of E-government services [25]. These factors include Trust in Internet, Trust in Government, Lack of Awareness, Perception of Ease of Use, Perception of Usefulness, Compatibility, Quality of Information, Age, Education and Computer Literacy.

5.3 A proposed Conceptual Model for the adoption of E-government in Pakistan

Rehman & Esichaikul [29] has delivered a third model of citizen adoption based on integrated models adapted from TAM, DOI and UTAUT. Rehman & Esichaikul [29] has discussed many integrated models and collaborate them in order to categorize them in the proposed model.

5.4 Other factors that affect the adoption of E-government services

There are some factors that have been mentioned by other researchers influence people to use E-government services. Cultural and social influences, including connection (Wasta)¹, Face-to-face interaction, Cultural differences and Gender issues, have an impact on the intention to use E-government services [22]. Privacy is another issue that influences citizen to adopt E-government services [1]. In addition, web usability and accessibility are also critical factors that affect the intention to use E-government services [30].

6 The proposed model

Based on what have been discussed previously, a new integrated model has been developed by adapting and integrating the critical factors that have been mentioned by other authors. Figure 4 shows the high level overview of the model. The addressed higher level model contains the intention to use E-government services and E-Readiness.

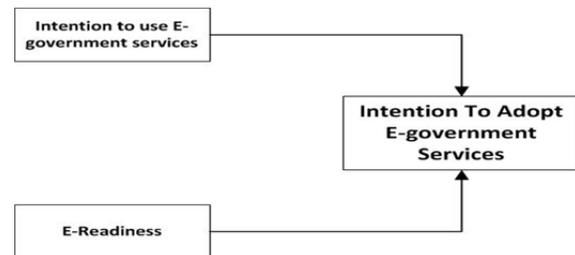


Figure 4. An Integrated Model for Citizen Adoption of E-government Services - High Level.

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 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. The full integrated model’s attributes, which shown in Figure 5, have been discussed as follows:

6.1 Quality of service

Quality of service has been suggested to play an important role in online services [29]. 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

¹ It is Arabic word which means being served because you know someone in the organization otherwise you will not get these services if you don’t know anyone, for instance, jumping the queue.

due consideration of information reliability and availability [29].

6.2 Diffusion of innovation

Based on Rogers [27] model of Diffusion of Innovation which has been discussed in the literature review, Carter & Belanger [5] has been made a modification by adopting compatibility, relative advantage and complexity, and excluding trialability and observability to replace it by image. Image is defined as “*the degree to which the use of the innovation is seen as enhancing to an individual’s image or social status*” [5].

6.3 Computer and information literacy

Computer literacy is defined as “whatever a person needs to be able to use (and know about) computers” [31], while “the ability to use information, or possibly the possession of knowledge of information is information literacy” [31]. The computer and information literacy are affected by the level of education that citizen held, age and gender [1], which all bar the citizen to adopt E-government services [25].

6.4 Culture

Culture has impacts on the citizen intention to use E-government services, that including culture influences, culture awareness and national culture [32]. It has been defined culture as “values, beliefs, norms and behavioral patterns of a group – people in a society for national culture, staff of an organization for organizational culture, specific professions for professional” [33]. Akkaya, *et al.* [32] state that many researchers have recognized the importance of considering cultural characteristics in online services.

6.5 Lack of Awareness

Awareness refers to how a person understands the activities of others, which provides a context for his own activity [34]. 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 [13, 22]. According to Baker & Bellordre [35] 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.

6.6 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 [36]. A study by AlAwadhi & Morris [22] found that most of the participants were worried about the technical issues. AlAwadhi & Morris [22] 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.* [1] states that reliable and integrated technical infrastructure could be the difficult part 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. [1] suggests that governments should provide a budget to build strong technical infrastructure in order to encourage citizen to adopt E-government services.

6.7 Website design

Researcher have suggest that the design of an E-government website may encourage citizens to use the services and make a good impression to increase citizens repetition [29]. 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 [29].

6.8 Security

Security is defined as the protection of information or systems from unsanctioned intrusions or outflows [37]. 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 [37].

I. Transaction Security

Transaction security is a critical for users when making online activities [38].

II. Information Security

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*” [39].

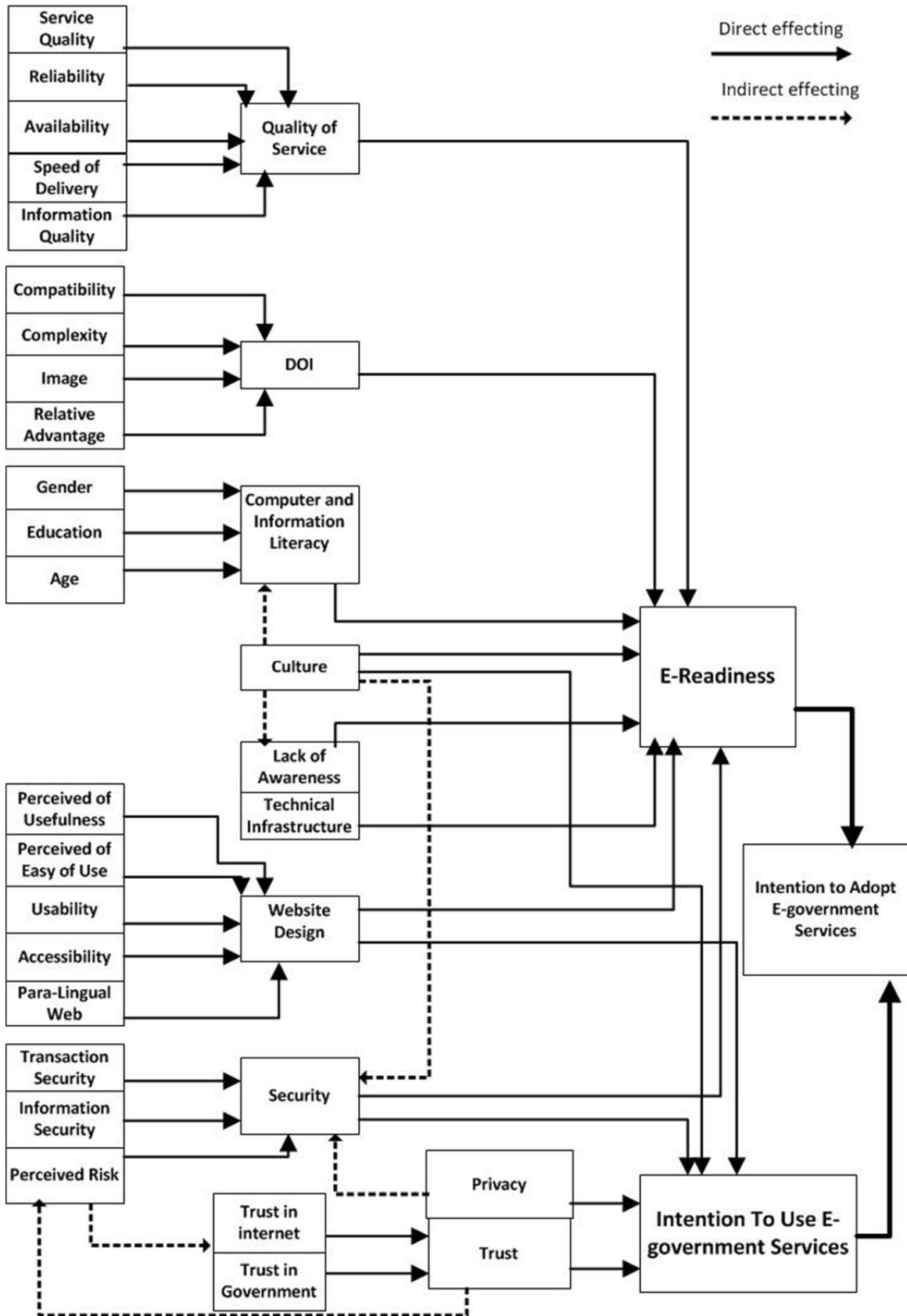


Figure 5. An Integrated Model for Citizen Adoption of E-government Services.

III. Perceived Risk

Perceived risk refers to the subjective evaluation by consumers associated with possible consequences of wrong decisions [40]. According to Bélanger & Carter [41], online services consumer are more concerned regard perceived risk when they share information and complete transaction. In addition, it has been said that the relationship between risk, trust and intention to use E-government services are trust reduces risk perceptions while the effect of trust on intention is mediated by perceived risk [41].

6.9 Privacy

It is mentioned that citizen concern with privacy of information has an impact on the consumer of the electronic services[23]. According to Akkaya, *et al.* [32] citizens are sensitive towards storage of their personal data which has a negative influence on the intention to adopt and continued use of E-government services.

6.10 Trust

Trust refers to “*an expectancy that the promise of an individual or group can be relied upon*” [41]. According to Bélanger & Carter [41] initial trust, which refers to trust in an unfamiliar trustee, is required in a relationship between citizen, with a shortage of credible or meaningful information about the e-service, and government. Citizen’s trust is generally based on trust of the government which is the assumptions made about the behaviours of the trustee, and trust of the Internet which is the institutional factors [41].

I. Trust of the Internet

Trust of the Internet (TOI) is consistently identified as a key predictor for the adoption of e-service [17, 41], and frequently labeled institution-based trust [41]. Institution-based trust refers to “*an individual’s perceptions of the institutional environment, including the structures and regulations that make an environment feel safe*” [17, 41]. According to Bélanger & Carter [41] “*institution-based trust is basically trust in the Internet: trust in the security measures, safetynets and performance structures of this electronic channel*”. E-government adoption depends on the belief of citizens that the capability of providing accurate information and secure transactions using the Internet as a dependable medium [41].

II. Trust of the Government

Trust of the government (TOG) is identified as perceptions of a person that concerning about the integrity and ability of the service provider [41]. The confidence of citizen in an agency’s

ability to provide online services is imperative for the widespread adoption of e-government initiatives [46]. It has been posited that the adoption of a technology has got a strong impact by trust in the agency [41]. According to Bélanger & Carter [41] “*in order to enable E-government initiatives, citizens must believe government agencies possess the astuteness and technical resources necessary to implement and secure these systems*”.

7 Conclusion and future work

Currently the World Wide Web (WWW) 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.

The model introduced in this paper has been derived from a desk study of the literature. Future work will be to validate the integrated model by using a triangulation² method which includes focus group and questionnaires with citizens, and interviews and questionnaires with government officials.

² Triangulation is used to increase precision an empirical research [I]. According to Runeson & Höst [I] using triangulation method by taking different angles towards the studied object will provide a broader picture. It has been stated that there are four different type of triangulation for example: “*methodological triangulation—combining different types of data collection methods, e.g. qualitative and quantitative methods*” [I, II].

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