

# TOWARDS THE DEVELOPMENT OF AN ADOPTION MODEL FOR E-GOVERNMENT SERVICES IN DEVELOPING COUNTRIES

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## Abstract

*E-government services have become powerful tools in government organizations by offering different information instantly and effectively. Specifically, information and communication technologies have become very useful tools in developing the ability of staff to accomplish jobs effectively and efficiently. Unlike developed countries which face only few issues in the adoption of e-government services, developing countries encounter several adoption problems from the stakeholders' point of view. Government-to-employee (G2E) is one aspect of e-government that covers activities and services that transpire between government units and their workers. This paper identifies the factors that improve the adoption of e-government services by employees in developing countries. The selected success factors (website quality, awareness, computer-self-efficiency, IT workforce capability and training) extended with Unified Theory of Acceptance and Use of Technology (UTAUT) – an extensively used model. The final conceptual model is proposed and presented in this paper.*

*Keywords: E-government, adoption factors, developing countries, G2E.*

# 1 INTRODUCTION

E-government is the use of information communication technology (ICT), websites, systems and new technologies to facilitate the interaction between the government and its stakeholders. The revolution of ICT has forced governments to find new mechanisms for accelerating the different documentation procedures between the government organizations and stakeholders. Several governments across the globe are refurbishing themselves with new e-government systems for the development and strengthening of their countries and to keep them competitive globally (Rana et al. 2013). E-government is not limited to the implementation of new IT systems but also often aims to improve public service delivery and to ensure government transparency and accountability (Ahmad et al. 2012; Luna-Reyes & Gil-García 2011). E-government services offer many benefits to their users, such as time saving (through effective and efficient services), ease of documentation, improved office management and employee-friendly systems, as well as improving access to information and services (Monga 2008). E-government projects can be categorized into different categories based on the stakeholder involved (Joseph 2013). E-government is able to deliver better government services and empowerment to citizens (G2C), enhance interactions among business companies and industries (G2B), improve relationship efficiency with other government agencies (G2G), and enhance employees' outcomes (G2E). The impacts of implanting e-government can include higher productivity, citizen satisfaction, economic growth, cost saving, improved literacy, and alleviation of poverty, among others (Gupta et al. 2008; Joseph 2013; Sultan et al. 2012). In this regard, G2E can be explained as the relation between the government and its employees. G2E is described by Tang, Zhang et al. (2011) as online transactions for which ready communication tools are used between government units and employees to provide seamless access to information with regards to employee compensation and benefit policies, training and learning opportunities. E-government adoption is facing several challenges and technological, cultural, and organizational obstacles which must be considered and handled carefully (Alshehri et al. 2012). In most developing countries, the building of social and technological infrastructure is a priority for poverty alleviation. Chen et al. (2006) suggested that despite the key technological and social differences between developed and developing countries, a number of developing countries have employed best strategies and practices in e-Government systems. In e-government systems, the repetitious failures of IT projects have become a vital and complicated puzzle for IT managers, experts, and researchers. Several e-government projects have failed to deliver specified outcomes due to lack of understanding about new technologies, information use, organizational factors, institutional arrangements, and involvement of socio-economic contexts in the selection, implementation, and use of ICT (Luna-Reyes & Gil-García 2011). By comparing strategic issues in the implementation of e-government in developed and developing countries, prior studies Chen et al. (2006) and Al-Rashidi (2010) have found that the literature is dominated by reports on developed countries' e-government and only a few research investigations have been conducted into the factors influencing the adoption of e-government in developing countries (Ahmad et al. 2012; Al-Busaidy & Weerakkody 2009; Alhujran & Chatfield 2008). A thorough review of the literature showed that the most common theories used to describe the factors that lead to successful adoption of e-government services are UTAUT, TAM, IS success model and TAM2. However, no model or theory has highlighted the issue of insufficient or inadequate e-government services, especially in developing countries where a high level of failure of e-government services projects is notable.

Hence, more investigative studies are needed to identify the most important issues related to the adoption of e-government systems by employees in developing countries as the system costs the government a significant portion of their budget for its development and application.

The research question that is developed for this study is:

- What are the critical factors and barriers that employees are faced with in the public organizations of developing countries to adopt e-government services?

The objective of this paper is firstly to review the current literature on the adoption of e-government services in order to identify the factors that motivate employees in public organizations of developing

countries to adopt e-government services, and secondly, to propose a conceptual model for the successful adoption of e-government services in the same context. The paper is structured as follows: the second section discusses the problem background of the research and then introduces the research methodology for this research, and in the third section provides an overview of e-government adoption in developing countries. This paper then identifies adoption success factors by analyzing the relevant literature in which models for successful adoption are proposed. Finally, the conclusion of the study is presented.

## **2 PROBLEM BACKGROUND**

The strategies needed to establish e-government, as implemented in many developed countries, are still unclear to most developing countries. There are so many differences between the two contexts; each one with its own beliefs, cultures and multidimensional views of using new technology (Gupta et al. 2008; Sultan et al. 2012). Most governments experience the risk of failure while implementing e-government initiatives (Sultan et al. 2012). The literature provides evidence for this; specifically, Heeks and Bailur (2007) reported that 35% of e-government projects in developing countries had completely failed, while 50% had partly failed and only 15% were considered successful. Several governments are still facing low-level adoption of e-government services by their citizens (Bélanger & Carter 2008; Kumar et al. 2007). In both 2008 and 2012, the regions with the highest levels of e-government readiness in rank order were Europe, Americas, and Asia (Joseph 2013; UN 2012). However, less research has been carried out on factors influencing the adoption of e-government in developing countries (Alhujran & Chatfield 2008). Individuals must improve their skills to formulate attitude, implement strategies, make decisions and confirm whether the implemented innovations are working or not. Organizations around the world have adopted and utilized e-government strategies according to their already available ICT, but the usage of e-government services always depends how the employees take advantage of them. More investigations are needed to examine the adoption of e-government services among the employees inside organizations, to justify whether such services are accepted by and useful to them. In some cases, organizations decide to abandon e-government services because the system is not worthy in their employees' point of view and they do not use it (Talukder 2012). There is still a lack of studies on the adoption of e-government services from the employee's perspective in developing countries and as such. Success factors involved in the adoption of e-government services by the employees of public and government organizations need to be explored.

## **3 METHODOLOGY**

This research began by reviewing the relevant literature on e-government services. The first database used to identify the relevant literature was the Scopus ® database. This was done by using a set of keywords and phrases developed for this research such as "e-government", "e-gov", "electronic government", "online government", AND inter-related with "success factors", "G2E", "benefits", "challenges" and "developing countries", and then looking at the title, abstract and keywords in the search results. The purpose of this was to trace the research that is particularly related to e-government adoption in developing countries. Other research articles were collected from different academic online databases like the ISI Web of Knowledge®, Google Scholar, ScienceDirect, ACM portal, IEEE, SAGE and SpringerLink from the period 2004 to 2014. A total of 224 related papers were collected, of which 97 papers were related to the present study. Research papers were analyzed in order to select the success factors that can lead to successful e-government adoption in developing countries, with a focus on the employee group. The investigation indicated that 97 papers matched our aim. Meta-analysis was conducted using the literature and the findings obtained are presented in the next section provide a wide picture about the current level of e-government adoption in developing countries.

## 4 E-GOVERNMENT ADOPTION IN DEVELOPING COUNTRIES

Developing countries are still in their infancy when it comes to implementing e-government services and face considerable problems and barriers, which restrict usage. Most failures result because the users requirements and needs were ignored when designing the services (Ahmad et al. 2012). Successful implementation of e-government services among developing countries requires a positive attitude among users towards the newest technologies. Not only are the governments responsible for the implementation of the e-government service but also for developing willingness to adopt such services, as the latter is a key contributing factor to their successful implementation (AlAwadhi & Morris 2008). Government decision makers endeavor to provide better services to people — to do so successfully they need to analyze and understand the factors which encourage users to use and adopt the e-government services (Ahmad et al. 2012; AlAwadhi & Morris 2008; Shareef et al. 2011). According to Shareef et al. (2011), the most important problems facing developing countries while implementing e-government are the instability of electricity, poor implementation of telecommunications and internet projects, lack of government support and the implementation of random and unconsidered projects. Researchers have concluded that because of the key social and technological issues faced by developing countries, they are not able to simply copy developed countries' implementation strategies for e-projects (Gupta et al. 2008; Al-Zoubi et al. 2011). Only a high level of usage of e-government services can make these project successful as the government must invest a huge budget and spend millions of dollars to develop the system (Sambasivan et al. 2010). Al-Rashidi (2010) investigated the technical and non-technical barriers of e-government. The concept of adoption and usage of developed e-government services and the success of projects are two very important issues to the government. From this aspect, the question of how to increase the users and adopters of e-government services is raised (Yonazi et al. 2010). A framework to examine e-government maturity in developing countries was suggested by Abdallah and Fan (2012), who recommended a framework that could help to identify areas of weaknesses and point out the risks of failure in e-government initiatives. Because of the many failures of implementation in developing countries when attempting to transfer strategies and projects from the experience of developed countries, more research is required into the needs of developing countries, in order to find new solutions according to their perspective instead of adopting strategies directly from developed countries, which risks failure and the wastage of government money and resources.

## 5 SUCCESS FACTORS FOR ADOPTING E-GOVERNMENT SERVICES

One of the outcomes of this research is to identify factors that directly or indirectly cause employees to adopt e-government services. The most commonly utilized factors in the field of e-government service adoption in developing and developed countries are summarized in Table 1.

Factor	Description	Author/s
Website quality	A high quality, accessible, uncomplicated and user friendly website that meets the needs of stakeholders in e-government services will positively increase the level of adoption.	(Alateyah et al. 2012; Alshehri et al. 2012; Altameem et al. 2006; Cegarra-Navarro et al. 2012; Hasan & Abuelrub 2011; Khan et al. 2012; Kumar et al. 2007; Persaud & Persaud 2013; Qutaishat 2012; Rehman et al. 2012; Sambasivan et al. 2010)
Trust	Trust in e-government services refers to the users' belief in their privacy and security features when using the electronic services via government websites, and their level of confidence that the service is secure and reliable. A high level of trust will increase the level of adoption among stakeholders.	(Al-Busaidy & Weerakkody 2009; Alsaif 2014; Dong et al. 2011; Mofleh & Wanous 2008; Papadomichelaki & Mentzas 2012; Rehman et al. 2012; Sambasivan et al. 2010; Sang et al. 2010; Shareef et al. 2011; Vathanophas et al. 2008; Voutinioti 2013; Zhao & Khan 2013)

Training	Training programs for stakeholders in e-government services will have a significant effect on the adoption of e-government services.	(Al-Zoubi et al. 2011; Altameem et al. 2006; Goings et al. 2003; Picazo-Vela et al. 2012; Sang et al. 2009; Talukder 2012; Vathanophas et al. 2008; Weerakkody et al. 2012)
Managerial support	A commitment to providing a positive environment that can encourage stakeholders to adopt e-government services is the duty of government organization managers.	(Al-Zoubi et al. 2011; Altameem et al. 2006; Talukder 2012)
Incentives	Motivating stakeholders to adopt e-government services by offering some incentives.	(Talukder 2012)
Awareness	The level of awareness among e-government stakeholders will affect the adoption of e-government services.	(Alateyah et al. 2012; AlAwadhi & Morris 2009; Altameem et al. 2006; Chowdhury et al. 2006; Khan et al. 2012; Mitrovic & Bytheway 2009; Mofleh & Wanous 2008; Persaud & Persaud 2013; Rehman et al. 2012)
Security	The level of protection that e-government services offer against different online threats. Level of risk of fraud, data and network damage and mismanagement.	(Al-Busaidy & Weerakkody 2009; Al-Zoubi et al. 2011; Alateyah et al. 2012; Rehman et al. 2012; Shareef et al. 2011)
ICT infrastructure	The existence of adequate ICT infrastructure (both software and hardware) within a good IT environment could provide a starting point for various stakeholders to adopt e-government services.	(Al-Zoubi et al. 2011; Alateyah et al. 2012; Altameem et al. 2006; Rehman et al. 2012)
Computer-self-efficiency	Researchers found that the level of adoption of e-government services is related to the ability to use a computer and in some cases the adoption depends on stakeholders' computer self-efficiency.	(Alsaif 2014; Shareef et al. 2011; Zhao & Khan 2013)
IT workforce capability	IT workforce should possess the skills, knowledge and experience necessary to facilitate the delivery of e-government services to stakeholders efficiently and effectively.	(Al-Busaidy & Weerakkody 2009; Al-Busaidy et al. 2009; Altameem et al. 2006; Arduini et al. 2010; Ebrahim & Irani 2005; Esteves & Joseph 2008; Lam 2005)
Availability	The types, numbers and level of e-government services offered by the government can facilitate stakeholders to use and adopt them.	(Al-Busaidy & Weerakkody 2009)
Resistance to change	Stakeholders that are used to paper based methods for accomplishing their jobs may resist change to the electronic based systems.	(Alshehri & Drew 2010; Daou et al. 2013; Ebbers & Van Dijk 2007; Lam 2005; Schwester 2009; Weerakkody et al. 2012)

*Table 1: Factors related to the successful adoption of e-government services*

Selected factors related to the adoption of e-government services matching the employees' needs (i.e. website quality, awareness, computer-self-efficiency, IT workforce capability and training) are also to be discussed in this paper.

Website quality and interactivity had the most significant impact on the willingness of users to employ e-government services (Qutaishat 2012). Hence, it is important for e-government designers to ensure that the system provides users with intensive interactivity so that they will perceive higher degrees of engagement, which would add to their intention to use e-government services. It was found that awareness is one of the barriers to adoption of e-government services (Alnuaimi et al. 2011; Dong et al. 2011). According to Baker and Bellordre (2004), lack of awareness is a major concern regarding the deployment and use of new technologies. A number of research investigations have been conducted to explore the barriers to adoption of e-commerce and e-government. They reveals that users' computer self-efficacy is related not only to skills but also to judgments what one can do with whatever skills one possesses. Shareef et al. (2011) described the "self-efficacy" factor of e-government adoption as the appropriate "attitude" to use. According to Al-Busaidy et al. (2009), the

IT skills of the employees in the public sector are very helpful in implementing online services. It was suggested that there is limited resource capability and lack of experience among government IT field workforces. The IT workforce needs to be improved in terms of knowledge and experience, therefore there is a need to train the inexperienced, and leverage the experienced elements of the workforce to improve the level of e-government services adoption and also to facilitate the effective and efficient delivery of e-services (Al-Busaidy & Weerakkody 2009). Talukder (2012) suggested that organizations need to provide training programs to encourage employees to use innovations more effectively. Organizations need to design training and other educational programs that motivate employees to adopt and use innovation.

## **6 PROPOSED MODEL FOR SUCCESSFUL ADOPTION**

Unified Theory of Acceptance and Use of Technology (UTAUT) is one of the newest theories in the field of multi-purpose technology acceptance models. Similar to previous acceptance models where the aim is to describe the user intentions to use information systems and expand the usage behavior. Venkatesh et al. (2003) synthesized this model to give a clear, complete picture of the acceptance process, improving dramatically on other theories with respect to individual perspectives. UTAUT was developed by integrating key elements from eight previous models used in the field of IS. The models are TAM, TRA, MPCU, TPB, TAM2, MM, DOI and SCT and each of these models attempts to explain and predict user behavior by different independent constructs. The UTAUT model was developed according to similarities between the empirical and conceptual premises of these eight models. UTAUT consists of four main constructs (performance expectancy, effort expectancy, social influence, and facilitating conditions) and it directly determines usage intention and behavior (Venkatesh et al. 2003). The variables (gender, age, experience and voluntariness of use) work as moderators of the main four constructs of usage intention and behavior. UTAUT was chosen to be extended by the addition of the suggested success factors from the literature, because our aim is to measure the employee's actual intention of using the e-government services. Expanding employees' behavioral intention is the primary aim of this paper, given that employees in developing countries need some particular circumstances and motivations to successfully increase their usage behavior in relation to e-government services inside their organizations. Therefore, we chose UTAUT as this fulfills the research objectives. For the purpose of this paper, we ignored the moderators from the conceptual model because our aim is to identify the factors that lead to successful adoption. As outlined, we reviewed different researchers' opinions that discussed adoption challenges in developing countries, especially among employees within government organizations. We found that some factors are considered very important in encouraging employees to adopt e-government services, (website quality, awareness, computer self-efficacy, IT workforce capability and training). The authors argued that the selected factors for this research should be considered to be the employees needs in relation to adopting e-government services within government organizations, and such factors must be carefully treated by the policy makers and developers of e-government services. Certain other factors were ignored because they do not address employees' needs. The factors that address the needs of employees can successfully encourage them to adopt e-government services within government organizations. Below, Figure 1 shows the proposed model for the successful adoption of e-government services among employees in developing countries.

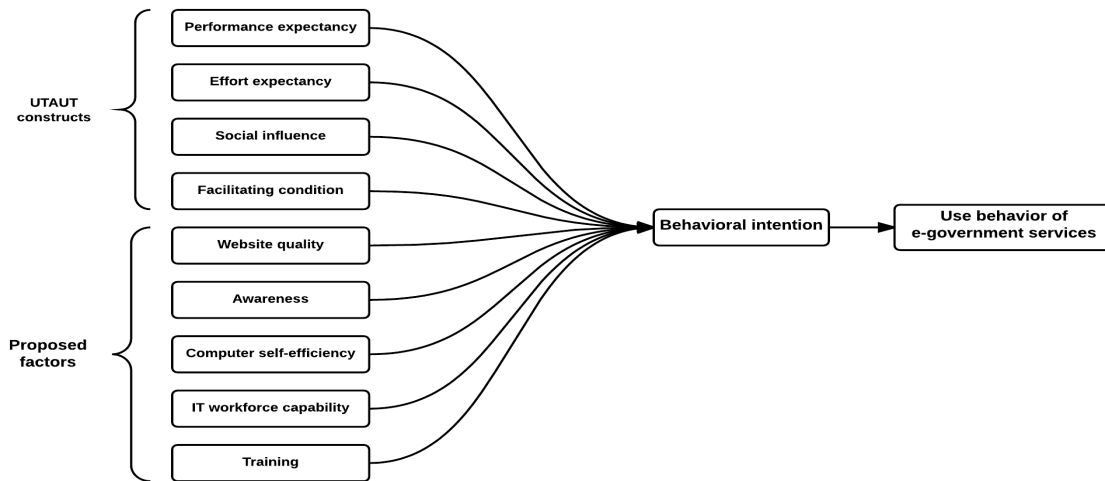


Figure 1: Proposed model for e-government services adoption among employees

As discussed above, if the employees find an adequate environment that supports all the factors discussed, e-government services projects will be successful. Otherwise, difficulties will arise for managers and policy makers, and budget and time will be wasted by the government. The authors therefore contend that the proposed factors (website quality, awareness, computer self-efficacy, IT workforce capability and training) extended with UTAUT factors will positively affect the behavioral intention of employees and will increase their adoption of e-government services. The proposed factors are expected to have positive increase relationship with behavioral intention and improve the usage behavior in relation to e-government services. The proposed model of this research needs to be empirically tested in order to verify the factors in terms of their reliability and applicability to employees in developing countries.

## 6 CONCLUSION

E-government projects still face a lot of adoption problems, especially in developing countries. Such projects cost the government a considerable proportion of its budget, and as such, the primary goal of system implementation is that the system be used and adopted, in order to capitalize on investments in the projects. Organizational employees, under the G2E category, need a suitable environment in their organizations to increase their intention to adopt e-government services. This paper has highlighted the current situation in developing countries and then identified the relevant factors. In doing so it has helped to provide a better understanding of the selected factors (website quality, awareness, computer-self-efficiency, IT workforce capability and training) for the successful adoption of e-government services. The chosen factors were extended with UTAUT, a well-known theory, utilized to measure the intention to use IS and expand usage behavior. The final conceptual model could fit the needs of developing countries as opposed to the UTAUT alone – a model created in a developed country environment. This research is in progress — testing the model empirically will give a clear vision of the relationship between the suggested factors and the level of usage behavior of e-government services. This paper is addressed to the governments of developing countries in general and to the policy and decision makers and managers who are responsible for developing and implementing e-government projects within their organizations. In other words, this paper addresses the government to employee (G2E) sector needs. The proposed model could also be tested in relation to e-government for citizens or businesses by future research.

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