

Towards a model of e-government services adoption among employees in developing countries

Omar Ahmed Ibrahim¹
omaralzaide@yahoo.com

Nor Hidayati Zakaria²
hidayati@utm.my

Author(s) Contact Details:

¹Universiti Teknologi Malaysia, Skudai, Johor, Malaysia

²Universiti Teknologi Malaysia, Skudai, Johor, Malaysia

Abstract—E-government in simple terms is the use of information and communication technology, especially websites and systems, to ease the interactions between a government and its stakeholders such as citizens, businesses and employees. Recently, most of the governments around the world have tried to implement e-government services within their organisations to facilitate the flow of work inside government organisations. These projects cost governments a lot of money. However, developing countries face a number of problems that are related to the e-government projects, especially the adoption of these services. Recent research in this field has mostly focused on the adoption of e-government services from the citizen perspective while few studies have focused on e-government services adoption from the employees' perspective. In this paper, a review of the literature is conducted to identify the success factors that lead to successful adoption of e-government services among employees in developing countries. The factors that are derived from the literature (including website quality, awareness, IT workforce capability, and training) are presented and discussed. A conceptual model is proposed to be tested empirically in the future.

Keywords – e-government; developing countries; employees; success factors; literature review

1. Introduction

E-government can be simply defined as the use of new technologies, especially information and communications technologies (ICT), websites, and IT systems inside government agencies and organisations, to facilitate the interaction between those agencies and their stakeholders. The revolution in technology has pushed governments around the world to find new ways to accelerate the different documentation procedures between the government and its stakeholders. The primary function of e-government is the utilisation of Internet-based IT systems to improve the efficiency, functionality and reliability of government operations such as services, access to government information, and interactions with citizens, employees, businesses and other government agencies [1-3]. E-government provides a platform to inspect prior progress and look at future opportunities in particular fields [4].

E-government not only includes the implementation of a new IT system but also often aims to improve public service delivery and to ensure government transparency and accountability [5, 6]. Breaking up the boundaries of administration among government organisations by using the available ICT is the essence of e-government, leading to the design of a kind of electronic virtual government [7]. In the last ten years, e-government systems have been developed to obtain important benefits such as cost savings, improved service quality, accountability, and enhanced public participation, among others [6]. E-government is able to deliver better government services to citizens through citizen empowerment (G2C), to enhance interactions among businesses and industries (G2B), to improve the efficiency of relationships among government agencies (G2G), and to enhance employee outcomes (G2E). There are numerous benefits of e-government systems, including higher productivity, efficiency, transparency, citizen satisfaction, economic growth, cost savings, enhanced access to information and reduced poverty [4, 8, 9].

According to [10], government-to-employee, or G2E, describes the online interactions that are facilitated by the use of a set of communication tools between employees and government units for the purpose of giving the employee instant access to information in regard to topics such as compensation, learning and training opportunities, policies, benefits and civil rights. G2E also provides a way to provide e-learning to employees and to encourage knowledge sharing between them.

E-government adoption is facing several challenges and obstacles involving technological, cultural and organisational aspects which must be considered and handled carefully [11]. In most developing countries, the building of social and technological infrastructure is a priority due to the goal of poverty alleviation. Moreover, due to the large rural populations compared to economically developed countries, these developing countries face additional difficulties in developing ICT infrastructure and scaling up e-Government initiatives. Chen et al. [12] point out that, despite key differences in technological and social aspects among developed and developing countries, a number of developing countries have employed best strategies and practices in e-government [12]. The regular failure of IT projects, including e-government systems has become a vital and complicated puzzle for managers, experts and researchers in

the IT field. Several e-government projects have failed to deliver the specified outcomes due to the lack of understanding about new technologies, information use, organisational factors, institutional arrangements, and the influence of socio-economic contexts in the selection, implementation and use of ICT [6]. In comparisons of the strategic issues and implementations of e-government in developed and developing countries, [12, 13] found that most successful e-government projects have been implemented in developed countries and these have been reported and presented in the literature. Few research investigations have been conducted to understand the factors influencing the adoption of e-government in developing countries [5, 14, 15]. Citizen-focused organisations merge customer relationship management, workflow and Internet technologies to empower government employees as knowledge workers. Therefore, employees must be equipped with a certain level of knowledge and skills to support the development and implementation of a successful e- government [16].

Bwalya (2009) states that governments should determine the adoption constructs for e-government services before the system delivering the services are established. Even though there are many studies on e-government adoption, the environments differ from one country to another. The environmental differences and unique characteristics in different countries could help or hinder the e-government services initiatives [17].

Most of the recent research on e-government services adoption in developing countries has been done from the citizen perspective. However, there is an important sector of e-government services for employees (G2E), which should be investigated in depth.

Hence, more investigative studies are needed to identify the most important issues related to the adoption of the e-government system by employees in developing countries, especially considering the significant cost incurred by governments to develop and apply such a system. Thus, the research question addressed in this paper is:

- What are the factors leading to the successful adoption of e-government services among employees in governmental organisations in developing countries?

This paper conducts a review of the literature related to the adoption of e-government services with the aim to identify the success factors that can help the employees in governmental organisations to adopt the applied services. The paper is structured as follows. Section 2 discusses the background to the problem addressed in this paper. Section 3 introduces the research methodology for the literature analysis. This is followed by the presentation of the literature review findings in Section 4. Section 5 then introduces and discusses the adoption success factors that are identified by analysing the relevant literature. Finally, a conclusion on this work is presented in Section 6.

2. Problem background

E-government as a phenomenon that has been implemented in many developed countries but is still not clear to most developing countries [8, 9]. There are so many differences in the two scenes in the developed and developing countries; each one has its own beliefs, cultures and multi-dimensional views of using technology. Most governments face the risk of failure when implementing e-government initiatives [8]. It has reported that 35% of the e-government projects in developing countries had completely failed, while half of these projects had partly failed and only 15% were considered as successful projects [18]. Governments are not alone facing these problems, as the private sector companies have similar risks[19]. A total of 60% of e-government projects are classified as either complete failures or partial successes [20]. Several governments are still facing the problems of a low-level adoption of e-government services by their citizens [21, 22]. In both 2008 and 2012, the regions of the world with the highest levels of e-government readiness in rank order were Europe, the Americas, and Asia [4, 23, 24]. However, little research work has been done on the factors influencing the adoption of e-government in developing countries [14]. In addition, there is a need to identify the influencing factors with a main focus on regions such as the Middle East and Africa [4].

There is a lack of studies that are concerned with the employees' intention to adopt e-government services in developing countries. While governments invest huge budgets to implement such services, the conceptualisation of G2E still needs more research and the factors that lead employees to adopt e-government services need to be explored. Individuals have to improve their skills to formulate attitudes, implement, make decisions and confirm whether or not the current innovations are useful. Organisations around the world have decided to adopt and utilise their available ICT but the real test of usage lies in how the employees take advantage of these innovations. There is a need for more investigations on the adoption of e-government services by the employees inside government organisations to understand whether or not these services are accepted and useful for them. In some cases, organisations decide to abandon the e-government service because it is not worthwhile for their employees and they cannot use it [25]. Each project for a specific organisation costs the governments a lot of money and the governments put a lot of investment into these initiatives to improve the employees' work environment and working conditions; each failed project will cost the government this investment. Hence, in the design of the system, the decision makers and developers must create a service that can meet the employees' expectations in order to avoid the failure of these projects. Therefore, there is

need to investigate the most important key success factors and challenges that face employees in using and adopting e-government services in developing countries.

3. Methodology

The research reported in this paper commenced with a review of 97 research papers from different online databases such as the ISI Web of Knowledge, ScienceDirect, SAGE, IEEE, Google Scholar, ACM Digital Library and SpringerLink. The search period was set from 2006 to 2013. Modified keywords were used to get deeper results. Keywords including “electronic government”, “e-government”, “e-government adoption”, “success factors of e-government adoption”, “e-government in developing countries”, “challenges to e-government adoption”, “G2E”, “G2E adoption of e-government”, “adoption of e-government among employees” and “successful e-government projects in developing countries” were used to collect the research related to this investigation.

The strategy for this research was to filter the publications to make sure that the most relevant research on e-government services adoption was obtained. The abstracts, keywords, introduction, discussion, and conclusion of the papers were reviewed. In some papers, the findings were also read. References were gathered from the selected papers in order to gain further information about research in this field.

The aim was to collect only the research papers related to the adoption of e-government services among the papers in the total pool and then filter these into specific papers on e-government services adoption and success factors. A total of 224 research papers on e-government services was collected; of these, 97 were on the topic of e-government services adoption. The next section reports the meta-analysis of the literature that was conducted in order to gain a wide overview of the current e-government usage and adoption in developing countries.

4. Literature review findings

This section presents the findings from the review of 97 research papers from different academic sources for the period from 2006 to 2013. The findings from the selected papers are related to the success factors for the adoption of e-government services in the context of developed and developing countries, with a focus on developing countries and the suitable success factors in engaging employees to adopt e-government services.

Some researchers have discussed the problems in adopting the new applications and systems that governments implement in their organisations. However, few investigations have reported on the factors influencing the adoption of e-government in developing countries [14].

Gupta et al. (2008) investigated the adoption of ICT to improve G2E interactions in a government organisation in a developing country. The adoption behavior was examined by employing the unified theory of acceptance and use of technology, which provided an integrative view of user acceptance towards e-government. The results of the study indicated that the performance and effort expectancy, social influence and facilitating conditions impacted positively on the adoption of the ICT [9].

Dorasamy et al. (2010) examined taxpayers’ intention to use the e-filing system in Malaysia. They analysed the factors which contributed to the adoption of such systems in Malaysia using three models: diffusion of innovation, the technology acceptance model (TAM), and technology readiness index (TRI). The analyses showed that taxpayers intended to utilise the e-filing system as people perceived that the submission method via the Internet was more convenient and time saving. This perceived readiness towards using the technology was paramount to their belief in the benefit of using the e-filing system [26].

Talukder (2010) investigated the adoption of technological innovations by individual employees in an organisational context in Australia. For an organization to succeed in bringing new innovations to the workplace, an understanding of the potential adopters and the factors influencing their adoption decision is important. TRI and the TAM as a basis of the theoretical framework were used to investigate these factors. The proposed model provides a valuable alternative and comprehensive theoretical basis to improve and enhance understanding of the acceptance of innovation by individual users [25].

Mamari et al. (2013) investigated e-government initiatives in developing countries from a government perspective to fill the empirical gap. A new theoretically derived and empirically confirmed framework of government motives to implement e-government was presented. The framework represents a view of e-government objectives which are conceptualised in a theoretical context. It can be utilised to help policy-makers to formulate successful e-government strategies [27].

Al Nagi and Hamdan (2009) found that governments in the Arab region faced unique challenges and obstacles in the adoption of e-government services, making the decision makers and developers approach these problems carefully and attempt to fix them before implementing any project to ensure the success of that project [28].

Hence, a conclusion drawn from the literature is that developing countries still face problems regarding e-government adoption by citizens, and more deeply, there is a lack of research on identifying and measuring the success factors that lead employees to adopt e-government services. In addition, most of the research used the TAM to measure the level of e-government services adoption. Therefore, there is a need to investigate new theories and develop new models associated with e-government services adoption.

4.1 Developing countries

Developing countries are still in the infancy of implementing e-government services and face huge problems and barriers, which restricts e-government usage. Most failures of these projects arise from ignoring the users' requirements and needs when the services are designed [5]. The successful implementation of e-government services in developing countries requires an adoption attitude to the newest technologies. Not only are the governments responsible for the implementation of the e-government services, but the willingness to adopt those services is also a key contributing factor [29].

Government decision makers usually try to provide better services to citizens, but it is also necessary to analyse and understand the factors that encourage people to use and adopt e-government services [5, 29, 30]. Shareef (2011) found that the most important problems faced by developing countries when implementing e-government services are the instability of the electricity supply, poor implementation of telecommunication and Internet projects, lack of government support and implementation of random and unstudied projects [30].

Researchers have summarised the key differences in terms of society and technology faced by developing countries when implementing e-government systems that were well-established in developed countries [9, 31]. It has been concluded that developing countries cannot implement developed countries' e-projects with full success. Only a high rate of e-government service usage makes it a successful project, considering that governments invest a huge budget in such a project and spend millions of dollars to develop it [32].

Researcher has investigated the technical and non-technical barriers to e-government adoption [13]. The concept of adoption and use of invented and developed e-government services and the success of projects is a very important issue to governments. From this aspect, the question of how to increase the users and adopters of e-government services is raised [33]. A framework to examine e-government maturity in developing countries was proposed by Abdallah and Fan (2012). They recommended a framework that could help to identify areas of weaknesses and point out the risks of failure in e-government initiatives [34].

As long as developing countries are facing failure in the adoption of e-government services, more discussion is required to investigate the individual's needs especially in the organizational context. Developed country experiences and projects usually face failures when they are implemented in developing countries. Hence, more discussions and investigations into the relevant success factors with a particular focus on the projects implemented in the developing countries are required in order to find new solutions according to their perspective, instead of taking developed country projects and facing the likelihood of failure and wastage of government money.

4.2 Success factors in e-government adoption

The outcome of this paper is to identify the factors that directly or indirectly affect employees' adoption of e-government services. These factors are collected from the review of the literature. Based on our understanding of the literature, we chose the factors that were important factors to be discussed and tested. Table 1 shows the factors selected in this paper. The sub-sections below present further discussion on the factors selected in this research.

TABLE 1: Success factors

Factor	Example of studies
Website quality	[35-37]
Awareness	[38-41]
IT workforce capability	[15, 28]
Training	[9, 25, 42, 43]

4.2.1 Website quality

An online web application or system can handle thousands more users compared to conventional and non-web applications. The ease, fast processing and availability of the web create an immediate expectation of quality and rapid application delivery. However, there are some technical complexities of websites and variances in browsers which can make the testing and quality control more difficult [35].

According to Floh and Treiblmaier (2006), web design, structure and content are the important factors for achieving customer satisfaction [36]. Li and Jiao (2008) confirmed a significant relationship between website quality and user

satisfaction which affects the actual use of online services [37]. From the review of the literature, it is found that the quality of e-government websites is an important factor that needs to be investigated thoroughly. If an e-government website is designed to a professional standard with high quality, it helps to enhance user satisfaction and facilitate adoption.

4.2.2 Awareness

Awareness refers to an individual's understanding of different activities, which provides a context for the activity [40]. To encourage citizens to adopt e-government services, the government should work on the awareness factor. It has been found that awareness is one of the barriers which affect the adoption of e-government services [38, 39]. According to Baker and Bellordre (2004), the lack of awareness is a major concern regarding the deployment and use of new technologies. It is of great importance for citizens to be informed properly about a newly deployed technology and its benefits [40].

An organised awareness campaign was launched in Kuwait regarding the introduction of e-government services through exhibitions, conferences and seminars, periodical bulletins and TV and radio announcements. About half of the participants (49%) in a study of the campaign mentioned the barrier of the lack of awareness of e-government services including about the benefits and how to use the services [41].

4.2.3 IT workforce capability

According to Al-Busaidy and Weerakkody (2009), the IT skills of employees in the public sector are very helpful in the implementation of online services. It has been suggested that there is limited resource capability and a lack of experience within the government IT workforce. It is necessary to improve the knowledge and experience of the IT workforce, therefore, there is a need for training and leveraging the experienced workforce to improve the level of e-government services adoption and also to facilitate the effective and efficient delivery of e-services [15]. Al Nagi and Hamdan (2009) investigated the ICT sector weaknesses in Middle East countries and recommended large financial investment to support communications, electronics, digital content and software services, which are essential for the building of information societies [28].

4.2.4 Training

Talukder (2012) suggested that organisations need to provide training programs to encourage employees to use innovations more effectively. Organisations need to design training and other educational programs that motivate employees to adopt and use innovation [25]. Gupta et al. (2008) suggested that information systems analysts and designers should design user-friendly ICT programs. The ease in using the ICT system directly impacts on individual and organisational performance. Government organisations also need to focus on providing adequate training and support to their employees while implementing and using such IT systems [9]. According to Sang et al. (2010) and Altameem et al. (2006), training the stakeholders leads to successful implementation of the e-government system [42, 43].

5. Discussion and proposed model

The analysis of 97 research papers was performed to identify the most relevant factors that need to be considered by governments before developing and implementing e-government services. There are a number of factors and these factors vary according to each perspective such as citizens, businesses, governments and employees.

Researchers [35-37] have suggested that website quality is one of the major factors from the citizen perspective. The website should be prioritized during design and must be user-friendly with high quality content and features. The professionally designed website with a high quality will increase the probability of e-government services adoption by employees.

Baker and Bellordre (2004), Dong et al. (2011) and AlNuaimi et al. (2011) stated that awareness is a very important issue regarding the adoption of e-government services by citizens. The lack of awareness among citizens leads to project failure [38-40]. Therefore, in this review, we selected awareness as an important success factor. The awareness issue is highlighted because the e-government system needs to be widely discussed within the organisation internally to ensure that all employees are well aware about the importance of the e-government services inside their organisation.

Al-Busaidy and Weerakkody (2009) emphasised the importance of IT workforce capability. It has been concluded that if there are professional IT employees within the organisation it helps to facilitate the successful e-government services implementation and also facilitates the effective and efficient delivery of e-services [15].

According to Al Nagi and Hamdan (2009), the ICT sector is weak in most Middle East countries and it requires a large financial investment [28]. They also pointed out that there is a significant need for initiating an education and

training plan to provide the e-government program with resources and the IT sector with new technological skills necessary for the successful implementation of e-government. Hence, the IT workforce capability inside the organisation is considered as a pillar because a professional IT workforce helps to develop, implement, maintain and support the successful adoption of e-government services.

Talukder (2012) stated that training programs for employees can encourage the employees to use the new innovation more effectively. Organisations need to design training and other educational programs that motivate employees to adopt and use innovation [25]. Government organisations also need to pay special attention to providing adequate training and support during the implementation and use of such systems [9, 43].

Research has revealed that the failure of most e-government services come from untrained and qualified employees, which makes the training another important issue to discuss more within the context of developing countries and from the employee perspective.

In this paper, we suggest a number of factors for successful e-government adoption in developing countries among employees. On the basis of the literature review, we developed the proposed model. The environment and the nature of work are certain to create different scenarios in developed and developing countries. Figure 1 shows the constructs that can lead to the successful adoption of e-government services among employees in developing countries.

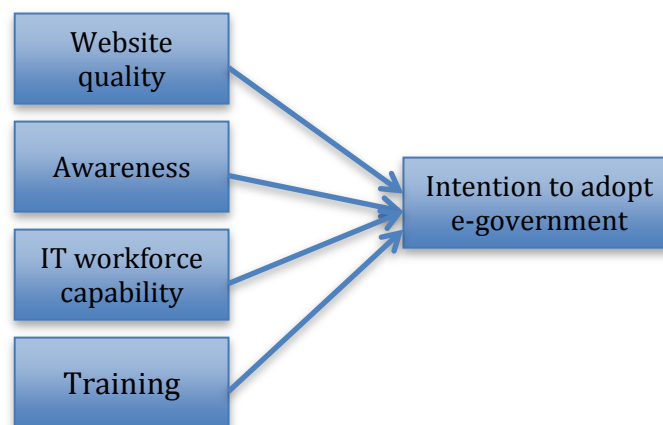


FIGURE 1: Success factors for e-government adoption among employees

This research has identified the factors that lead to successful adoption of e-government services among employees. In order to reach the goal of this research, we will apply a suitable theory and then design a questionnaire to empirically test the new model. In order to reach the goal of this ongoing research, we will apply a suitable theory and then design a questionnaire to empirically test the new model.

6. Conclusion

The conclusion reached in this paper after analysis of the selected related research from 2006 to 2013 is that developing countries clearly still face problems in terms of e-government services adoption and there is a huge number of failed projects. An investigation of the important factors that lead to successful adoption was presented in this work. Website quality, awareness, and IT workforce capability and training were selected from the literature as important factors. These factors are important in the G2E field as little research has focused on this category. This research adds to the body of knowledge by identifying some important factors that policy makers and developers should consider in the design and development of e-government services for employees in the context of developing countries. As an extension of this research, future work can discover more factors that are associated with the successful adoption of e-government projects and discover more about employees' needs. The limitation in this research is the dearth of articles that discuss the adoption of e-government services from the employee perspective and specifically in the context of developing countries, as most of the research on e-government services adoption was conducted from the citizen perspective.

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