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Trustworthiness: A key Factor for Adoption Models of e-Government Services in Developing Countries

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Abstract. Implementing e-Government services in many countries has been done and developed over the past decades. These countries are enjoying the benefits of using new technologies instead of the traditional ones, but there are evidences that there are differences in taking the advantages of using of the developments in the Internet and associated information and communication technologies in different countries. Developing countries have more problems in implementing the successful e-Government services and there is luck of practical studies on the issues of implementing e-Government services. One of the issues involving on successful implementation of e-Government services is the adoption of the services. Several adoption models were introduced in recent decades but these models are modifying regarding to the different situations and environments. One of the key factors that must be considered in many developing countries is trustworthiness. This paper argues that Trust of Government and Trust of Internet are two important factors presenting trustworthiness and five interviews with information technology (IT) managers in five public organizations in Iran has been done. These factors can be considered in future adoption models which are going to be used by organizations that are going to develop the e-Government services.

Keywords: E-Government Adoption Models, Trustworthiness, Information Technology Adoption Models, E-Services implementation, E-Government.

1. Introduction

In the late 1990, the idea of offering government services to the citizens using the new communication technologies emerged from the idea of e-business. In recent years, e-Government influences every aspect of daily life of the citizens in developed countries. Technology offers two main opportunities for government: one is increased operational efficiency by reducing costs and increasing productivity, and the other is better quality of services provided by government agencies [1].

Some countries have praiseworthy implemented the e-Government service, but at the same time many other countries have difficulty coping with the various aspects of implementing the e-Government services. More than eighty five (85) percent of e-Government implementations are unsuccessful [2] and number of unsuccessful implementations of e-Government services is more than expected. Thirty five (35) percent of e-Government implementations totally failed which means these projects did not implemented at all or quickly abandoned. Partial failures occur when objectives are not met or significant undesirable effects emerge [2] and fifty (50) percent of the implementations are partial failures. Another study shows that failure rate of all e-Government initiatives is more than sixty (60) percent because of short of expected outcomes [3]. Studying about the e-Government implementation might lead the public organization's IT managers to better implementations of their e-Services in the future. One of the essential issues that must be considered before and after the e-Government projects' implementation is the adoption of the users.

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This paper is organized into nine sections. The first section is the introduction of the paper. Section two describes the information technology adoption and section three highlights the technology adoption models. Section four introduces the adoption factors and trustworthiness will be explained in section five. Next section is presenting the study question and section seven describes the methodology of the research. section eight is presenting the study findings and finally, the ninth section conclude the paper.

2. Information Technology Adoption

For governments it is very important to be aware of citizen's attitudes toward new information systems, and their adoption levels with new technology base services. Adoption of e-Government is complicated and cannot be done in a limited period of time [4]. From country to country, the adoption rate to e-Government is different [5]. The adoption of e-Government joins both the processing and the communication technologies together since it integrates processes, people, information, and technology in the service of getting government objectives [6].

Adoption of IT is a critical factor for determination of information systems success, since unused or unaccepted information systems have little value however, adoption of information systems is still not understood properly [7]. The adoption of new information systems in public organizations changes the structure of these organizations and use of IT by public organizations changes the structure of organizations and the way people access information as well as information usage patterns [8]. Various models investigating the adoption of technology in organizations introduced by the researchers and the most discussed ones are TAM, TAM2, UTAUT, and DOI.

3. Adoption Models

After introducing major innovations in the information and communication area, adoption of the users to the new technologies became more important. Adoption of e-Government services focuses on both processing and the communication technologies [6].

Several adoption models were presented by the researchers and these models were tested through past decades. Technology Acceptance Model (TAM) [9] , Extension of Technology Acceptance Model (TAM2) [10], unified theory of acceptance and use of technology (UTAUT) [11] and Diffusion of Innovations (DOI) [12] are the most focused models to test the adoption of users. Adoption models were used for e-Government services [13, 14], but e-Government services are not mature enough, and therefore they only got the researchers attention in the past few years. Consequently, only a small number of studies focused on e-Government services. Moreover, there are various environments in different countries and this make the adoption issue more complex. The differences between the cultures of the developed and developing countries must be considered when investigating the adoption of the users [15].

4. Adoption Factors

There are several adoption factors which can be driven from the mentioned adoption models [16]. These factors are as follow: Perceived Usefulness, Perceived Ease of Use, Subjective Norm, Image, Job Relevant, Output Quality, Result Demonstrability, Voluntariness, Experience, Performance Expectancy, Effort Expectancy, Social Influence, Age, Gender, Experience, Voluntariness of Use, Relative Advantage, Observability, Trialability, Complexity and Compatibility. The factors influencing the adoption of users are not limited to these factors [16]. Regarding various countries with various situations and cultures, the significance of factors would be different. Therefore, choosing the proper technology adoption model for each technology and each environment would be different. This is the reason that makes the adoption of technology a complex issue. Trustworthiness is one of these factors.

5. Trustworthiness

Trustworthiness is "the perception of confidence in the electronic marketer's reliability and integrity" [17]. One of the main preventing factors for adoption of e-Government users is lack of trust to the online

transactions [13, 18, 19]. This means that users will only adopt the e-Services which they trust [20-26]. Luck of trust may lead to the failure of or serious delay in e-Government initiatives [27].

By and large, in many developing countries, citizens need to trust to the e-Services to use them. Even in developed countries many people are on this belief that e-Government will make the government services easier to reach but at the same time they are worrying about sharing their personal information with the public organizations [27].

Trustworthiness is a complicated term but several researchers tried to make trust more clear to determine the impact of trust on the adoption of information systems. One of the most referenced studies proposed trust as a term with two objectives: first trust to provider of a service and second trust to the mechanism through which the service is provided [28]. For the online services, users must trust on the vendor of the service and also the technology which the vendor is using [29]. Therefore, for e-Government services users must have enough trust to the government as the provider of the service (Trust of the Government) and also to the internet as the technology the government uses to offer its services (Trust of the Internet) [29, 30].

Uncertainty is present in many IT innovations especially when the infrastructures are based on the Internet. Trust of the Internet (TOI) is regularly classified as institution-based trust. Institution-based trust refers to an "individual's perceptions of the institutional environment, including the structures and regulations that make an environment feel safe" [31]. Institution-based trust for the e-Government and e-Commerce considered internet trust in several studies [19, 29-32]

For the users' adoption of e-Government services it is necessary that they feel the communication channel between them and the government is secure and their privacy will be sufficient and the connection is dependable. Furthermore, the users must to be aware of security and privacy concerns [33]. Trust of the government (TOG) refers to "one's perceptions regarding the integrity and ability of the agency providing the service"[30]. For the e-Government's service adoption, it is also necessary for the users to be confident about service provider's abilities which in the case of e-Government the service provider is the government.

6. Study Question

This study seeks to find out what is the probable missing factor in the famous technology adoption models which are usable for e-Government services.

7. Research Methodology

To find the answer for the study question, a qualitative method was used. Esfahan, the second most populated province in Iran as a developing country was chosen to gather data. Five IT managers in five different public organizations were questioned. Data collection was performed in March and April 2010 with semi structured face to face interviews.

The interviews were divided into two parts. The first part focused on the current situation of e-Government services in the Iran's public organizations, and in the second part the interview's focus was on the probable impacting factor on the adoption of users. These public organizations were under government administration, and the interviews' average duration was about one hour. They were asked about the importance of each adoption factor, and the interviews content were analysed.

8. Study Findings

The e-Government services (e-Services) were implemented in the public organizations under the government control but at the same time, the managers mentioned that number of users were not as much as expected. They were eager to find out the reason of low level usage or participation of the new IT projects by the users.

Focusing on the significance of the factors, it was found that however there are many factors which have impact on the adoption of the e-Government users but several factors are significantly more important for the users.

Based on the IT managers view of point, trust of internet and trust of government are more important than many other factors mentioned in the famous adoption models. Four IT managers believed that TOG is very important and three of them were on this believe that TOI is very important. Moreover, the managers stated that TOG is the key factor for the users' adoption; however they were not confident about it.

9. Conclusion

Developed and developing countries have different environment in their public organizations and they face different users' behavior with the new IT services. Although these countries are trying to get more benefits from the new information technology in the public organizations.

One of the factors that must be considered in developing countries is trustworthiness. It was noted that in some organizations trustworthiness is more important than many other adoption factors. In other words, trustworthiness factors (Trust of Government and Trust of Government) seem to be two missing factors in many adoption model that were used in many public organization in developing countries. Especially when using these adoption model to examine e-Government service adoption.

The future work will be a quantitative investigation as the next step of this study. For the quantitative study a questionnaire must be designed and used to collect data. An integrated adoption model based on the exact quantitative findings can be introduced.

This study can help the IT managers design the e-Services of the government more efficient. The e-Government services without the users to adopt will not be useful.

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