E-government Adoption in the Hashemite Kingdom of Jordan: Factors from Social Perspectives

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Abstract

The Hashemite Kingdom of Jordan provides an example of a nation improving global competitiveness through development of *Information* Communication strong Technology (ICT) with the aim of becoming a knowledge based country and a regional Information Technology (IT) centre. Egovernment is an important part of this strategy, however there appears to be a lack of understanding of the social factors that may influence citizens' intention to use egovernment. This paper makes contribution in examining these factors search through literature and questionnaire and data collected from 400 The research Jordanian participants. explores four different social factors: trust in terms of the security and privacy and trust in government, attitudes and beliefs, education, and accessibility. This research uses exploratory factor analysis to identify the main factors that may influence egovernment adoption in Jordan.

1. Introduction

The internet as "an eraser of difference" that provides the universal access to information leading to social and economic development at national and international levels [1]. The internet is a medium used by e-government to deliver its services and information through government Web pages. It has, changed, therefore the relationship between government and the other sections of society (citizens, the public sector, the private sector and businesses) from a traditional face-to-face or paper-based means of communication, to an interactive communication through Web pages. E-government is defined in this paper as the "use of the internet to

bring together a country's citizens, businesses and government" [2]. The observable enhancements in telecommunication technologies, the internet as an innovation technology, and the appearance of ecommerce are among the reasons for implementing e-government [2]. E-commerce is defined as goods or services' trade that are conducted via the internet [3]. E-commerce is considered as an e-government initiative [4].

The benefits of e-government, such as efficiency in delivering government services and information [5] and ensuring more citizens participate in making political decisions [6], are the main reasons behind adopting e-government by developed and developing countries. Developed countries, characterized by features such as a long history of democracy, good infrastructure and specific government structure [6], have adopted e-government as a new innovation technology. However, developing countries as well as developed countries can benefit by adopting the new technology.

Governments, whether they are from a developed country or a developing country, need to identify the main factors affecting e-government adoption in order to specify the strategies required to successfully implement an e-government strategy. The Hashemite Kingdom of Jordan is one country that has initiated an e-government project to ensure the efficient delivery of services to the public and to reduce the cost of delivering such services. The Jordanian government, therefore, needs to identify influences that may affect e-government adoption in order to specify an appropriate strategy. Egovernment is not only improving public services but is also part of creating "a climate in which people will feel civically more engaged" [7]. Identification of the social factors and specifying the strategies to deal with them will be of benefit to the Jordanian government in facilitating efficient delivery of services and information to the public.

2. Background Literature and theoretical foundation

This section illustrates the theoretical background and previous researches introduce the factors from social perspectives.

2.1. E-government: Social Factors and E-government Adoption

This section identifies the different social factors which might influence citizens' intention to adopt egovernment. Following sections introduces the different factors.

2.1.1. Trust. The concept of trust has been identified in a variety of situations and from different views. "Trust is a central defining aspect of many economic and social interactions" [8]. Trust is defined as a belief that others will behave in a predictable manner [8].

Trustworthiness can be perceived by the availability of three characteristics of a trustee which are ability, benevolence, and integrity [9]. Ability means to what extent a trustee can process "that group of skills, competencies and characteristics that enable a party to have influence within some specific domain" (p. 717). Benevolence means to what extent a trustee is believed "to want to do good to the trustor" (p.718). Integrity means to what extent a trustee adheres "to a set of principles that the trustor finds acceptable" (p.719).

Based on the above three characteristics, a trustee should adapt his/her way of performing tasks to the predictable beliefs that citizens, who represent the trustor, might have. In this paper, the trustee is the government and the trustor is the citizens. The three characteristics above show the importance of having citizens' trust for government. Therefore, based on the above definitions, especially the trust definition in e-commerce, this research defines trust in e-government as the belief that governments will adopt and implement an e-government with full functionality of privacy and security.

Previous research considers e-government as a way to develop citizens' trust and confidence in government [10]. In order to implement e-government successfully many issues need to be resolved. The electronic nature of interaction with e-government services leads to privacy, security and trust issues for citizens interacting with government electronic services [11]. Human interaction is one of the most important elements of e-services [12]. There are many tasks performed via human interaction and one of these tasks is trust building and assurance [13].

E-government requires interaction between citizens as consumers and the government as a provider of the e-government services. This interactivity requires citizens to exchange personal information, such as credit card details, to accomplish the required services. This kind of relationship requires citizens' trust and previous

research considers this as one of the main barriers of e-government development [14]. The main concern of citizens, in many countries around the world, is the fear that their information could be misused [15] [11]. This research examines both trust in website and trust in government in Jordan.

2.1.2. Attitudes and Beliefs. Citizens with negative attitudes toward using government e-services represent one of the main barriers for e-government adoption. Some citizens may have a negative attitude towards electronic services and that they would prefer to stay with traditional methods, which for most is the paper-based way [16].

West [17] examined the ability of e-government to influence citizens' views and attitudes about government and their confidence in the effectiveness of service delivery. His analysis of government websites and the attitudes towards e-government of 1003 randomly sampled US residents found that as citizens become familiar with e-government; the usage of public sector websites has the possibility to reform underlying views about government. He added that citizens who use government websites are more able to develop positive views about public sector effectiveness in solving problems. Therefore, this research contends that e-government is a good method for influencing citizens and ensuring positive attitudes toward government itself. The research in this paper is focused on addressing attitudes and social belief issues relevant to e-government adoption by Jordanian citizens.

2.1.3. Education. The lack of education of citizens, especially in information and computing technology, is proposed as the most important factor affecting e-Government adoption in Jordan. There are three key elements of education that should be considered for successful adoption for any technology. The elements are [2]: awareness of the internet; understanding of the internet; and workers with information technology skills. This section addresses the importance of internet understanding and the requirements of having the necessary skills to use information technology such as the internet and computers.

In some countries, there is the incorrectly held view that an increased number of information technology applications will lead to increased unemployment. Pons [2] found that the most important reason for lack of IT adoption in Arabic countries is the high level of illiteracy [2].

Education has been described as one of the problems related to e-government adoption, suggesting that as citizens' education rises, and their knowledge in using the internet increases [18]. The

most frequent use of e-government information and services comes from populations who are experienced in using the internet as a technology [19]. There was a suggestion indicating that if citizens cannot access e-government services through the World Wide Web, then the government should not stop other channels, such as Call Centers or Fax, offering e-government services [20].

2.1.4. Accessibility. The Web is a significant tool that has changed communication between people and the way they do business [1] as online communication increases. face to face communication decreases. As Web use has increased, ensuring a well-designed website has become a main concern of many governments [5]. Accessibility is one of the main elements that should be taken into consideration when designing websites. "Government web sites that do not meet the online needs of targeted users, added to the complexity of government organizational structure, may pose virtual barriers that prevent information seekers from attaining their goals" [21] (p.11). E-government websites should be designed in ways that ensures that they are accessible to the public. Accessibility is defined as "the degree to which web information is accessible to all human beings and automatic tools" [22]. A study conducted on website design revealed that accessibility is one of the elements required to design efficient and effective websites, beside other elements such as navigation, aesthetic and content Accessibility influences the citizen's experience with websites and their satisfaction and adoption of new technology [23]. Accessibility, besides functionality and usability, is one of the most important methods of building useful user-centered e-government services [24]. So, this research addresses website accessibility in Jordan as one of the component that affects e-government adoption.

2.2. Diffusion of Innovation Theory

Innovation is an "idea, practice, or object that is perceived as new by an individual or other unit of adoption" [25]. E-government is a technological innovation adopted by many governments in either developed countries or developing countries.

Researchers in information technology related adoption studies have used this theory to discuss the information technology innovation based on the innovation's characteristics. There are five characteristics: relative advantage, complexity, compatibility, triability and observability. A metanalysis of research on innovation adoption-implementation found that relative advantage,

complexity and compatibility are consistently significant in influencing innovation adoption [26].

This paper uses the Diffusion of Innovation Theory to identify the social factors affecting egovernment adoption in Jordan. These factors were identified through examining the applicability of technological characteristics (relative advantage, complexity and compatibility) in the adoption of e-government in Jordan. The following the definition of the three mentioned characteristics of Diffusion of Innovation Theory. Relative advantage is defined as "the degree to which an innovation is perceived as better than the idea it supersedes" [25]. Compatibility is defined as "the degree to which an innovation is perceived as being consistent with the existing values, past experience, and needs of potential adopters" [25]. Complexity is defined as "the degree to which an innovation is perceived as difficult to understand and use" [25].

2.3. Technology Acceptance Model

Technology Acceptance Model (TAM) is an adaptation for Theory of Reasoned Action, which states that actual behavior is influenced by the person's intention to perform such behavior, and this intention is influenced by one's attitudes and the surrounding subjective norms [27]. TAM states that there are two determinants for the consumer's attitudes toward usage intention and these are: Perceived Usefulness and Perceived Ease Of Use. Perceived Usefulness (PU) is defined as "the degree to which a person believes that using a particular system would enhance his or her job performance" [28]. Moreover, Perceived Ease of Use (PEOU) is defined as "the degree to which a person believes that using particular system would be free of effort" [28]. System acceptance will suffer if users do not find a system useful and easy to use [28]. Therefore, the technology that is relatively easy to use and helpful will have a positive influence on the person's attitudes and intention toward using that technology [28]. This research proposes that the main two constructs of TAM, perceived ease of use and perceived usefulness are concerns of Jordanians regarding adoption of e-government.

3. Methodology

This study surveyed people in Jordan to sustain their perceptions of e-government in Jordan. The results were analyzed using factor analysis.

3.1. Sample

The questionnaire was administered to 400 Jordanian citizens who have a regular access to the internet. There were 38.2% male and 61.6% female respondents. Thus, the majority of the respondents were female. The data of the analysis revels that 49.4% were in the range of 20-29 years old, 31.4% were less than 20 years old, 13.5% were in the range of 30-39 years, 4.2% were in the range of 40-49 vears of age, and 1% were over 50 years old. These percentages show that the range 20-29 years of age is the largest group of the sample. The majority of respondents were University students. 70.6% were a student in the universities while 15.5 % were employees in the public sector, with 9.7% were employee in the private sector. University is the most frequently used place by respondents to use the internet. 40.9% of respondents use the internet at the university, 34.2 % use it at the home, and 14.2 % use it at internet café. Work recorded the lowest percentage which is 10.2%. Of the respondents, 23.7% use the internet for email and chatting purposes. In addition, 4.5% use it for shopping, 24.4% use it for homework or checking results, 19 % using it for readings news. Option "others" was chosen by 27.7% of respondents. The range of less than one hour is the range of time which spent by 28.9% of respondents, 26.7% use it 4-8 hours of time, 20.4% use the internet more than 8 hours, and 23.2% 1-3 hours per week. 60.1% of respondents hold the bachelor level of education, 21.9 % hold diploma level, 10.0% the number of respondents who hold the higher education level of education, while the rest of the respondents either hold the secondary school level of education or chose the "other" option.

3.2. Instrument Development, Validity and Results

This study utilised a survey comprising 65 questions (items) to examine the different social factors in the most practical way possible. Most of the survey items were adapted from previous studies, following is an indication for the these studies: trust of the internet and government (4 items - Carter and Barlengar [29]; 3 items - Vassilakia et al. [16]); attitudes and beliefs (3 items - Jarvenpaa et al. [30]; 1 item -Vassilakia et al. [16]), perceived ease of use and usefulness (7 items - Davis [28]; 8 items - Carter and Barlengar [29]); relative advantage and compatibility (7 items - Moore and Benbasat [31]), complexity (7 items - Slyke et al. [32]), and intentions (3 items - Geffen and Straub [33]; 2 items - Pavlou [34]).

The research team reworded the questions to make them applicable to Jordanian participants. The researcher's self -developed questions include education (5 items), accessibility (10 items), were written based on what had been reviewed in the literature. A panel of experienced e-government researchers reviewed and approved the final questionnaire. The five point Likert Scale (interval scale - from strongly agree to strongly disagree) was used to measure different items (questions) in the research questionnaire. This study measures the different factors, based on the internet (web) as the main medium for running e-government. Because English is not the first language of Jordan, and most people are not fluent in English, the questionnaire was translated into Arabic. Back translation was used, the questionnaire translated from English to Arabic first and then from Arabic to English. Back translation described as "the best known and most popular method in educational testing psychological measurement" [35].

The researchers used exploratory factor analysis to identify specific factors relevant to e-government adoption in Jordan. The 65 items of the Likert scale were subjected to axial components analysis using SPSS version 16.0. Prior to performing axial component analysis, the suitability of data for factor analysis was assessed. Inspection of the correlation matrix revealed the presence of many coefficients of .3 and above. The Kaiser-Meyer-Oklin value was .869, and the Bartlett's Test of Sphericity reached statistical significance, supporting the factorability of the correlation matrix.

Axial components analysis was conducted with Varimax rotation. The axial factor analysis revealed the presence of 14 components with eigenvalues exceeding one. An inspection of the screeplot revealed a clear break after the sixth component. The researchers retained six components as these components showed a number of strong loadings each other. These components with accessibility, perceived usefulness (PU), complexity, trust in website, trust in government, and beliefs. Moreover, a strong loading of items were recorded for the dependent variable (e-government adoption). Due to weak loadings, four factors were dropped from any further analyses. These were education, perceived ease of use, relative advantage, and attitudes.

The main components were then evaluated for reliability using Cronbach's alpha. Table 1 presents the major components of the exploratory factor analysis and the reliability analysis.

4. Discussion

This section provides a discussion for the main results of the exploratory factor analysis, manly for the independent variables (IVs); Table 1 lists the main factors for further discussion.

Table 1. Reliability Analysis

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Construct	No. of items	Alpha
Trust in	4	0.778
website		
Trust in	4	0.751
Government		
Beliefs	3	0.733
Accessibility	8	0.898
Perceived	7	0.870
usefulness		
Complexity	5	0.812
Adoption	5	0.811

The following paragraphs discuss the significant factors of e-government adoption in Jordan.

4.1. Trust in Website and Government

This research shows that trust in government is an identifiable concern of internet users in Jordan. As previously outlined, lack of citizens' centricity is one of the main weaknesses of e-government in Jordan [36]. Trust in internet and trust in government were a major finding of the factor analysis conducted in a previous e-government adoption study [29]. In that study, trust in internet and trust in government, are emerged as a significant component with multiple regression analysis indicating trust as a predictor of citizens' intention to use e-government [29]. The electronic nature of interaction with egovernment services leads to privacy, security and trust issues for citizens interacting with government electronic services [11]. The main concern of citizens, in many countries around the world, is the fear that their information could be misused [15] [11]. Further analysis will utilize trust in website and trust in government to specify their influence on egovernment adoption in Jordan.

4.2. Beliefs

Beliefs emerged as a significant component of egovernment adoption in Jordan. Religious beliefs are the main items used in the beliefs section of this survey. Dimitrova and Beilock [37] found that religion plays a critical role of determining the adoption of the internet in the former socialist nations, where the majority of the population is Orthodox, Roman, Catholics or Protestant, or Muslims/ Buddhist. They declare that the countries with Muslims majority populations tend to have lower internet connectivity.

Previous e-government initiatives have been mainly developed based on strategies suitable for Western social life, where religion often plays a less obvious role in citizen's lives. Religion plays an important role in Jordanian life, and this research supports previous research findings that indicate that beliefs, and in particular religious beliefs, play an identifiable role in e-government adoption.

4.3. Accessibility

Accessibility is emerged as a significant component of e-government in Jordan. In Jordan, there is no standard design for the websites either for the ministries or the other entities of government. From the other side, the participants were internet literate which illustrate the need to have a well adequate design for the websites to make them more satisfied. Accessibility will be used in further research to examine its influence on e-government adoption in Jordan. In Saudi Arabia and Oman, Abanumy et al. [22] mentioned that the websites in these two countries still need considerable efforts to become accessible websites at all.

4.5. Perceived Usefulness and Complexity

The survey respondents are internet literate which makes them more capable to assess to what extent the use of e-government websites are easy to understand and use, and to what extent it is useful in conducting the different transactions. Therefore, the questions assessing these two constructs loaded as expected in the factor analysis. Further research will determine the influence of these two factors on egovernment adoption in Jordan. In previous research, complexity was not included in the model of egovernment adoption due to its similarity with the perceived ease of use [29]. Moreover, in that research, perceived usefulness was loaded with relative advantage and the researchers decided to drop it from further analysis. The participants which were surveyed in that research had different levels of computer and internet expertise whereas the participants in this research were all internet literate.

6. Conclusion

This study gives more insights to different factors. The factors derived from the Technology Acceptance Model, Diffusion of Innovation and literature of social factors, in order to define the main

social factors influencing e-government adoption in Jordan. This research used exploratory factor analysis for the different items of the different factors. The results indicate that, accessibility, beliefs, perceived usefulness, complexity, trust in egovernment, trust in government, and e-government adoption are the main components retain for further analysis. Knowledge of the factors that influence adoption will enable Jordanian government to develop online services that meet the needs of its citizens. The position of e-government adoption in the Middle-East Region is still at a developmental stage despite the growing importance and emphasis governments, of this region, place on e-government. Currently, there is a lack of attention in investigating the factors that may influence citizens in adopting egovernment. This research examines these issues in one of the countries in this region and the results can quite easily be adapted to the other Middle-Eastern countries as some of researchers see similar social life in the region [2].

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