



JISTEM: Journal of Information Systems and  
Technology Management

E-ISSN: 1807-1775

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Brasil

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ADOPTION

JISTEM: Journal of Information Systems and Technology Management, vol. 11, núm. 1, enero-abril,  
2014, pp. 5-20

Universidade de São Paulo  
São Paulo, Brasil

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## DISCOVERING CITIZENS REACTION TOWARD E-GOVERNMENT: FACTORS IN E-GOVERNMENT ADOPTION

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### ABSTRACT

E-government has been considered as one approach for changing the face of government in the eyes of the citizenry. Therefore, citizens' socialization in relation to their engagement with e-government should be explored. This study argues that citizens played a significant role in determining the success of an e-government project in the Middle Eastern country of Jordan. This paper aims to provide insight and evaluation into the factors that could influence e-government's effective functioning in the Jordanian social community through its interaction with citizens. The study collected data from 356 Jordanian citizens via a survey, to ascertain their understanding of 10 factors that may influence their intention to use e-government services. To investigate the adoption of e-government services in depth, two departments in Jordan were selected: the Jordanian Government's Income and Sales Tax Department (ISTD) and its Driver and Vehicle Licenses Department (DVDL). The factor analysis technique was used to identify the main factors related to e-government services' adoption. The results indicated that trust in the internet, website design, religious beliefs, internet and computer skill confidence, word of mouth, resistance to change, perceived usefulness, relative advantage and complexity are the main factors that should be considered when addressing the topic of e-government services' adoption in Jordan. This study is different from most existing studies on e-government adoption as it empirically investigated the impact of word of mouth (WOM), *wasta* (favoritism), and resistance to change on e-government adoption. This study highlights the importance of considering the social cohesion of the Jordanian community when exploring factors related to e-government adoption.

**Keywords:** Technological innovation, e-government, adoption, services, survey, government, citizens, social cohesion

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Manuscript first received/*Recebido em*: 13/05/2013 Manuscript accepted/*Aprovado em*: 13/02/2014

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## 1. INTRODUCTION

Governments worldwide are implementing and supporting a variety of electronic initiatives such as e-government, e-commerce and e-business. E-government has been developed by governments to improve the efficiency and effectiveness of internal operations and processes, public communication with the citizenry and engagement in transactional processes with individual and organizational elements (Warkentin et al., 2002). For the purpose of the current research paper, e-government was identified as a

Mechanism through which government services are produced and delivered to citizens utilizing Web-based internet applications.

The government in Jordan is one of the governments that decided to implement e-government. It has introduced e-government as one of the initiatives for creating a knowledge-based society (MoICT, 2006a). In 2006, the Jordanian e-Government Strategy ensured e-government's commitment to a customer-centric approach and considered citizens as a core concern when introducing its public services. Delivering enhanced and faster public service through e-government became one of the Jordanian government's obligations. Yet, it has been demonstrated that the lack of citizen-centricity in the implementation of e-government was one of the main challenges of e-government implementation in Jordan (MoICT, 2006b). Therefore, it is necessary to question whether or not citizens intend to use e-government services and to accept this new form of interaction with the government. Previous research has found that the success of e-government implementation was dependent not only on government support, but also on citizens' willingness to accept and adopt e-government services (Alomari et al., 2012).

Therefore, it was necessary to obtain and evaluate Jordanian citizens' perceptions about e-government as a change in their lives and therefore to clarify their response to government in relation to this new technological initiative. This study has shown that the response consisted of a combination of the following factors that need to be scrutinized when highlighting the topic of e-government services' adoption, particularly in a Middle Eastern country like Jordan: trust in the internet, website design, religious beliefs, internet and computer skill confidence, word of mouth (WOM), resistance to change, Wasta (favoritism), perceived usefulness, relative advantage, complexity.

The paper is organized as follows. First, the paper presents previous research work about e-government adoption. After the research's theoretical framework was delineated, data for this study were collected using a questionnaire and were analyzed using factor analysis: significant findings were then discussed and the study's conclusion was presented. Finally, this paper by collecting new data sets, based on a new sample and new research questions, follows a new approach extending previous research work (Alomari, 2010; Alomari et al., 2010, 2012).

## 2. BACKGROUND

E-government like other technological innovations such as e-business, e-commerce and internet banking is an internet-driven activity. Moon (2002) declared that "... the idea of e-government followed the private-sector adoption of so-called e-business and e-commerce" (p.425). Fang (2002) stated that: "e-business and e-commerce are subsets of e-government" (p.2). Previous studies on e-government were administered based on analytical and evaluation research conducted in the areas of e-commerce and e-business (Alomari et al., 2012; Carter and Bélanger, 2005; Ebrahim and Irani, 2005; Pons, 2004). On researching e-government in Arab countries, Pons (2004) reported "we believe that the issues involving e-commerce can be applied to e-government in order to predict the concerns and problems of the technology" (p.31). The following paragraphs report on the previous main studies which have explored factors related to the adoption of e-government with indications that the research was steered towards addressing the same factors related to the adoption of other technological innovations including internet banking.

Trust in the internet is one of the main factors highlighted as significant in investigating e-government adoption in both developed and developing countries (Al-Shafi and Weerakkody 2008; Carter and Bélanger 2005; Carter et al., 2011; Chang et al., 2005). Trust in the internet is often identified as institution-based trust which is "the belief that needed structural conditions are present (e.g. in the internet) to enhance the probability of achieving a successful outcome in an endeavour like e-commerce" (McKnight et al., 2002; p. 339). Warkentin et al. (2002) clarified the prominent relationship between institution-based trust and e-government adoption.

Website design has been endorsed as one of the main factors which assist in explaining e-government adoption (Alomari et al., 2012; Gilbert and Balestrini, 2004). Websites were recognized as the main gateway through which the Jordanian Government could deliver its services and interact online with its citizens (MoICT, 2006a, 2006b). Therefore, well-presented content on government websites was very important. Previous evaluation studies of government websites introduced features and criteria that should be included in their design, such as the availability of e-government websites with clear and organized content (Smith, 2001; Zhang and von Dran, 2000). Gilbert and Balestrini (2004) emphasized the importance of the visual appeal of website design on people's willingness to use e-government services.

Religious beliefs were another factor discussed in the literature with respect to information technology especially after the rapid growth of the internet. This has led to a change in the way that people interact in social communities, from face to face to online interaction. Researchers have therefore been prompted to investigate the internet's impact on societies where traditions, norms and religion play a significant role in people's lives (Alomari et al., 2012; Al-Saggaf, 2004; Hill et al., 1998). In previous studies, researchers have explained the effect of religious views on the usage of information technology in Arabic countries (Al-Saggaf, 2004; Hill et al., 1998; Norton, 2002).

The literature has also indicated that confidence in internet and computer skills was another factor related to e-government adoption. Having the required skills to use the technology is necessary to ensure the success of any technology usage (Dugdale et al., 2005; Pons, 2004). Previous studies have indicated the importance of investigating the influence of individuals' internet and computer skills on their intention to use e-government services (Bélanger and Carter, 2009; Carter and Weerakkody, 2008; Vassilakis et al., 2005).

Word of mouth (WOM), *wasta* (favoritism), and resistance to change are other factors that should be considered when exploring factors related to e-government adoption by the citizenry. There is a lack of studies in the literature investigating the role of these three factors on technology and e-government adoption. This study therefore will be a useful resource and a valuable addition to the literature about technological and e-government adoption.

Word of mouth has captured the attention of many marketing researchers who have considered WOM to be a commanding medium for publicity (Arndt, 1967; Westbrook, 1987). This paper acknowledges the importance of word of mouth in the electronic context in general and in e-government in particular. Therefore, it is very important to highlight its influence on e-government adoption. In researching WOM with respect to technology adoption, Kim and Prabhakar (2004) conducted a survey-based study which revealed the intermediate influence of WOM on the adoption of internet banking. The current research paper is investigating the impact of word of mouth on another technological innovation that is e-government.

*Wasta* is one of the underlying characteristics of social life and networks in Arabic countries (Makhoul and Harrison, 2004). "*Wasta*" is clarified as an Arabic term that indicates the act and person who intercede on behalf of another party or parties (Cunningham and Sarayrah, 1994). On the other hand, Feghali (1997) mentioned that the process of utilizing influence in one's interpersonal network to receive favors is called "*wasta*". In *wasta*, people deploy their interpersonal connections in order to obtain advantages that would not otherwise be obtainable. Several studies have been conducted to address the issues of *wasta* within different contexts (Al Awadhi and Morris, 2009; Makhoul and Harrison, 2004). In the technological context, Al Awadhi and Morris (2009) provided a qualitative focus group-based study that indicated that *wasta* was one of the significant factors related to e-government adoption in the Middle Eastern country of Kuwait. This study through a quantitative-based survey investigates the "*wasta*" in relation to the adoption of e-government in another Middle Eastern country, Jordan.

Resistance to change is one of the terms that has been identified and clarified mainly in the managerial and organizational context. This study explains resistance to change from a social perspective as it explores the factors related to citizens' e-government adoption in the social community of Jordan. Ebbers et al (2007) highlighted the importance of investigating the resistance to e-government innovations. Zander (1950) defined "resistance to change" as: "[b]ehavior which is intended to protect an individual from the effects of real or imagined change" (p. 9). Sathye (1999) proved the necessity of investigating the role of resistance to change in adopting the technological innovation, internet banking, through a survey-based study which

examined the factors influencing the adoption of internet banking by Australian consumers.

To sustain a comprehensive understanding of e-government adoption in Jordan, it was necessary to introduce the theoretical framework used in this research paper in the following section.

### 3. THEORETICAL FRAMEWORK

This study uses two theoretical frameworks to study factors related to e-government adoption in Jordan: these are the Diffusion of Innovation Theory (DOI) (Rogers, 1983) and the Technology Acceptance Model (TAM) (Davis, 1989). Following is a brief presentation on these theories.

#### **Diffusion of Innovation Theory (DOI)**

“Innovation” is an “idea, practice, or object that is perceived as new by an individual or other unit of adoption” (Rogers, 1983, p. 11). Based on the characteristics of innovation, researchers studying the adoption of information technology have utilized the Diffusion of Innovation Theory (DOI) to discuss information technology innovation. According to the DOI, there are five characteristics of successful adoption (Rogers, 1983): relative advantage, complexity, compatibility, triability, observability.

Three among these five characteristics have been found to be consistently significant in technology adoption (Tornatzky and Klein, 1982). These are:

- Relative advantage: “the degree to which an innovation is perceived as better than the idea it supersedes” (Rogers, 1983, p. 213)
- Compatibility: “the degree to which an innovation is perceived as being consistent with the existing values, past experience, and needs of potential adopters” (Rogers, 1983, p. 223)
- Complexity: “the degree to which an innovation is perceived as difficult to understand and use” (Rogers, 1983, p. 230).

Previous research has recognized the importance of relative advantage, compatibility, and complexity in investigating the adoption of different technological innovations including e-government (Carter and Belanger, 2005; Ojha et al., 2009; Schaupp and Carter, 2005; Van Slyke et al., 2004).

#### **Technology Acceptance Model (TAM)**

The Technology Acceptance Model (TAM) is an adaptation of the Theory of Reasoned Action which states that actual behavior is influenced by the person’s intention to perform such behavior with this intention influenced by one’s attitudes and subjective norms (Ajzen and Fishbein, 1972). The TAM asserts that there are two determinants for the consumer’s attitudes towards usage intention which are:

- Perceived usefulness (PU): “the degree to which a person believes that using a particular system would enhance his or her job performance” (Davis, 1989)



- Perceived ease of use (PEOU): “the degree to which a person believes that using a particular system would be free of effort” (Davis, 1989).

If technology is relatively easy to use and helpful, this will positively influence the person’s attitudes and intention towards using that technology (Davis, 1989). Davis’s (1989) model, the TAM, is used to evaluate a user’s acceptance of a technology. Previous studies have confirmed the applicability of using the aforementioned constructs to research e-government adoption (Carter and Blanger, 2005; Chang et al., 2005; Hung et al., 2006).

In previous research (Alomari, 2010; Alomari et al., 2012), the above constructs of the DOI and the TAM were used. Based on qualitative and quantitative studies, the authors found that relative advantage, complexity, and PU played a significant role when they investigated the adoption of e-government websites in Jordan. Thus, a modified version of these theories will be examined in this paper by investigating in depth the applicability of the aforementioned constructs to study the adoption of e-government services with the services of two government departments, ISTD and DVLD, selected for study. Based on a quantitative based survey, new data sets with a new sample were collected to conduct the current study. The following section illustrates the method used in this research paper.

#### 4. METHOD

This section introduces the main demographic characteristics of the sample used and also details of the survey utilized to conduct the study.

##### Sample

A questionnaire was administered to 356 Jordanian citizens who regularly accessed the internet and who were major users of ISTD and DVLD’s services, to obtain their perceptions about e-government adoption. Purposive sampling was used in the current study. This kind of sample is used when the purpose is to gain information from particular target groups (Tashakkori and Teddlie, 2003).

Of the respondents, 64.9% were males and 35.1% were females. Of the sample, 3.9% were less than 20 years old, 36% were in the age group of 20–29 years old, 30.1% were in the age group of 30–39 years old, 21.6% were in the age group of 40–49 years old, and % were over 50 years old. Among respondents, 71.3% resided in urban areas in Jordan, while 27.2% of respondents resided in remote areas. The majority of respondents were generally employees: 33.4% were employees in government services and 37.4% were employed in the private sector. Most of the respondents (52.8%) held a bachelor degree level of education. Internet usage at home and work recorded the highest percentage, 45.5% and 30.9% respectively. Of the respondents, 32.8% used the internet for email and chatting purposes, 5.9% used it for shopping, 22.7% used it for homework or checking educational study results, 41% used it for reading news, and 31.2% used it for obtaining information from government websites and downloading forms. Most of the respondents (48.9%) accessed the internet one to three hours per

week. Figure 1 shows a graphical presentation for some demographic characteristics of the current study's participants.

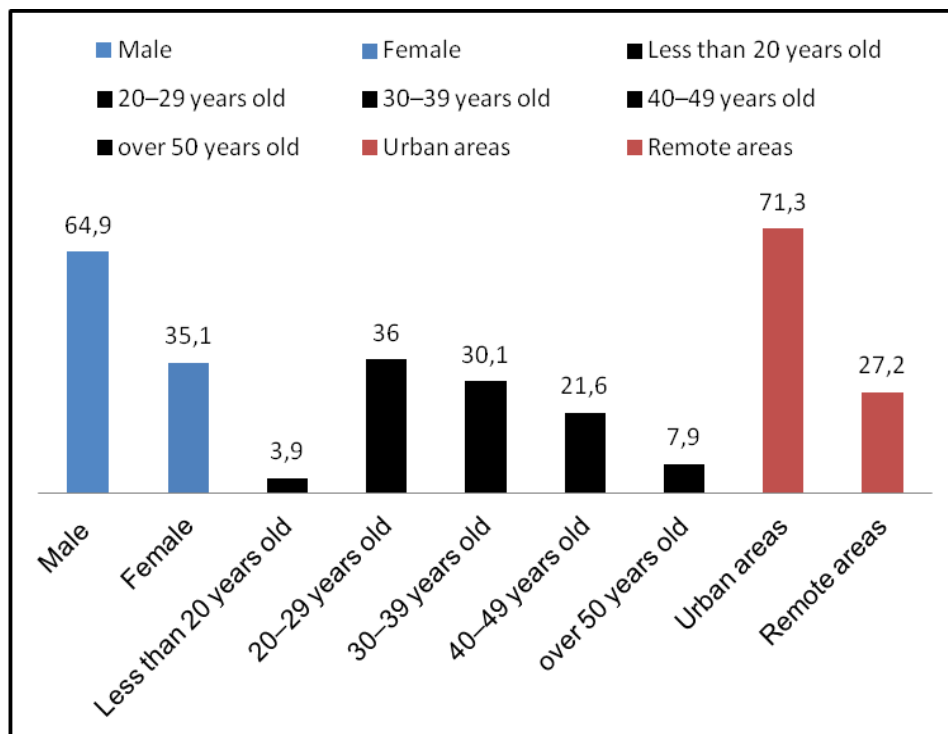


Figure 1: Demographic Characteristics of Survey's Participants

### The survey

This study used a survey to determine the factors related to e-government adoption in Jordan. To develop a greater understanding of e-government adoption in Jordan, two survey instruments were designed for the two government departments:

- Income and Sales Tax Department (ISTD)
- Driver and Vehicle Licenses Department (DVDL)

The same item scales were used in the two instruments. The survey consisted of 53 scale items which were designed to examine different factors. The items of some factors were adopted from previous studies (Carter and Bélanger, 2005; Wang, 2003; Alomari et al., 2012; Waddel and Sohal, 1998; Harrison-Walker, 2001; Carter and Bélanger, 2005; van Slyke et al., 2004). Some items were self-developed items with their design based on a literature review and research project conducted by Alomari (2010). These items were reworded to make them more suitable for Jordanian participants.

This study's questionnaire utilized the five-point Likert scale (interval scale from strongly agree to strongly disagree) to measure different scale items. As English is not the first language of Jordan, with most people not fluent in English, the questionnaire was translated into Arabic by an accredited translator. A panel of experienced people then reviewed the translations to ensure accuracy and integrity. A



back-translation was also utilized and reviewed to ensure the credibility of the questionnaire after its translation, firstly from English to Arabic and then from Arabic to English. A panel of experienced e-government researchers reviewed and approved the final questionnaire.

## 5. RESULTS

This section reports the results of factor analyses undertaken to identify the main factors related to e-government adoption in Jordan. It describes factor analysis and its reliability.

### Factor analysis

To first analyse the results of the survey, exploratory factor analysis was conducted for each independent variable and the dependent variable. The 53 items of the Likert scale were subjected to axial components analysis using SPSS version 17.0. 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 0.3 and above. The Kaiser–Meyer–Oklin values were above 0.6 for the different constructs, except for *wasta* (favouritism), 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 3, 8, 3, 4, 5, 5, 4, 5, 4, and 5 components with eigenvalues exceeding 1 for trust in the internet, website design, belief, internet and computer skill confidence, word of mouth, resistance to change, perceived usefulness, relative advantage, complexity, and e-government adoption, respectively. According to the general rule of thumb, only those factors with eigenvalues greater than 1 should be considered important for analysis purposes (Hair et al., 1998). The screenplot for the aforementioned variables was inspected.

Thus, the variables which showed a strong loading in this study: trust in the internet, website design, religious beliefs, internet and computer skill confidence, word of mouth, resistance to change, perceived usefulness, relative advantage, complexity, e-government adoption. It was decided to eliminate the factor of *wasta* from any further analysis. Table 1 shows the loading for the different constructs.

Table 1: Factor analysis—citizen data										
	FACTOR LOADING									
ITEM	TRUST_I	WEB	BELIEF	SKILL	WOM	RTC	PU	RA	CX	ADOP
TRUST_I3	.788									

TRUST_I1	.788									
TRUST_I2	.712									
WEB3		.828								
WEB4		.808								
WEB6		.759								
WEB5		.750								
WEB2		.713								
WEB1		.705								
WEB7		.683								
WEB8		.550								
BELIEF3			.951							
BELIEF2			.930							
BELIEF1			.780							
SKILL1				.827						
SKILL4				.821						
SKILL3				.797						
SKILL2				.760						
WOM3					.741					
WOM1					.708					
WOM4					.615					
WOM6					.594					
WOM2					.564					
RTC3						.802				
RTC4						.789				
RTC5						.788				
RTC2						.550				
RTC1						.463				
PU2							.816			
PU1							.709			
PU5							.689			
PU4							.651			
RA5								0.710		
RA6								0.670		
RA1								0.669		
RA2								0.663		
RA4								0.647		

CX3									.811	
CX2									.762	
CX4									.742	
CX1									.688	
ADOP1										.688
ADOP3										.685
ADOP5										.646
ADOP2										.599
ADOP4										.555

Notes: Trust\_I = trust in the internet; WEB = website design; BELIEF = religious beliefs; SKILL = internet and computer skill confidence; WOM = word of mouth; RTC = resistance to change; PU = perceived usefulness; RA = relative advantage; CX = complexity; ADOP = adoption

### Reliability Analysis

The internal reliability of the main components of factor analysis was evaluated using Cronbach's alpha. Table 2 introduces the major components of the exploratory factor analysis and the reliability analysis.

Table 2 : Reliability analysis of variables		
CONSTRUCT	NUMBER OF ITEMS	CRONBACH'S $\alpha$
Trust in the internet	3	.807
Website design	8	.899
Religious beliefs	3	.917
Internet and computer skill confidence	4	.879
Word of mouth	5	.783
Resistance to change	5	.804
Perceived usefulness	4	.804
Relative advantage	5	.806
Complexity	4	.838
Adoption	5	.775

## 6. DISCUSSION

This section discusses the following significant factors as presented in Table 2: trust in the internet, religious beliefs, website design, internet and computer skill

confidence, word of mouth, resistance to change, perceived usefulness, relative advantage and complexity.

The results related to trust in the internet showed that it is essential to incorporate the concerns of citizens in the developing country of Jordan with regard to the privacy and security of their personal details and to consider their willingness to engage with e-government. This study's findings are in the line with previous research conducted by Carter and Bélanger (2005) in the developed country of the USA as trust in the internet showed a strong loading in the factor analysis. This research paper showed the necessity of exploring this factor in relation to e-government adoption in developed and developing countries.

The factor, religious beliefs, was measured using different scale items which described different religious beliefs and views toward the internet, for example, immorality issues and adult themes. Although there is a lack of research on the role of religious beliefs in e-government adoption, the substantial body of research conducted by Alomari et al. (2012) has leveraged a knowledge base in order to explain this role. This paper extends the authors' research by providing an in-depth understanding through the usage of more scale items, such as anti-religious propaganda, to measure religious beliefs.

Website design emerged as a significant component of e-government adoption in Jordan. Different evaluation studies denoted the effect of government websites including adequate features to ensure users' satisfaction (Smith, 2001; Wang et al., 2005). These studies provided a base for the present study in its design of the main scale items for measuring website design: an example of these items is the availability of clear directions for navigating e-government websites. In terms of the factor, internet and computer skill confidence, this study presents the importance of considering the fundamental role of technical skills, that is, internet and computer skills, when researching the factors that influence people's intentions to use e-government services. The varied purposes of using the internet, such as reading news and online shopping, mentioned by survey respondents indicated their different skill levels in interacting with the internet. This study is in line with the literature as it reports on the need to discuss the variation in citizens' technical skill level and their enthusiasm for using e-government services (Belanger and Carter, 2006; Vassilakis et al., 2005).

The nature of the survey respondent population, who were mostly employees, explained the strong loading in the factor analysis in terms of the resistance to change factor. Most of the scale items used to measure this factor reflected the changes that would occur with the introduction of e-government services. Employees would be concerned about different kinds of changes related to e-government as a technological innovation such as losing their jobs as they might be replaced by technology. On the other hand, word of mouth recorded a strong loading in the factor analysis. The way in which this factor was measured showed how people would socialize and network about e-government. Jordan is one of the Arabic societies that are collectivist in nature (Hofstede, 2009). Individuals demonstrate their commitment to and trust in the group to which they belong in different ways, such as when they make decisions about whether or not to use the internet based on the experiences of others whom they trust.

Relative advantage, perceived usefulness and complexity factors were recorded with strong loadings in the factor analysis. The participants were internet-literate and major users of the two government departments (DVLD and ISTD) on which the survey was conducted. This enabled participants to be more capable of assessing how easy it was to understand and use e-government services, how useful these services were when conducting different transactions and to what extent they considered e-government more important than the traditional ways of interacting with the government. In previous research conducted in a developed country, the USA, relative advantage and perceived usefulness were loaded together in the factor analysis and the researchers decided to drop them from further analysis (Carter and Bélanger, 2005). Yet in this research, PU and relative advantage were loaded separately, thus showing the importance of including both constructs to investigate e-government service adoption in developing and Middle Eastern countries like Jordan.

Wasta was the only factor was dropped down from further analysis since it has recorded a weak loading. This might refer to the sample used in this study who was internet literate people. Internet literate people may view the internet as a desirable channel by which to interact with government, as they are more aware of how this kind of interaction could limit wasta.

The discussion and evaluation of the aforementioned factors are necessary to further examine their direct influence on citizens' intentions to use e-government. Further research will determine the direct impact of these factors on e-government adoption.

## 7. RESEARCH IMPLICATIONS

This research prompts the government in Jordan on a series of factors that could be used to stimulate a proposal for their promotional campaign about e-government, with word of mouth (WOM) being an example of these factors. To join the two-way live conversation occurring between people about e-government, the government in Jordan needs to design the right promotional campaigns about e-government services. These campaigns could include different themes such as why e-government is important in people's real lives and real success stories about using e-government. These campaigns should clearly address and answer people's different concerns and questions related to e-government. These concerns include the issue of security and privacy in dealing with e-government through different electronic channels and could be addressed by announcing the different strategies and applications being used to secure data. Through the promotional campaigns, different brand communications could be used to ensure access for different categories of society (people who have or who do not access to the internet): these would include traditional advertising (offline media) and technology-based advertising through internet and television.

Social networking applications, such as Facebook and Twitter, are one of the internet based technologies through which the Jordanian government can increase

awareness of people about e-government. The government in Jordan should introduce social networking applications as future potential channels to enhance citizenry's interaction with different governmental ministries and agencies.

## 8. CONCLUSION

This paper presents a study with a multidimensional theoretical framework which combines a literature review, the Diffusion of Innovation Theory (DOI) and the Technology Acceptance Model (TAM) to identify the main factors related to e-government adoption by the public in Jordan. The study collected data from 356 Jordanian people who had regular access to the internet. Factor analysis was the main analytical technique utilized to identify the factors related to e-government services' adoption. This study has provided an in-depth analysis of e-government adoption by focusing on services provided by two government departments, ISTD and DVDL. The main conclusion is that trust in the internet, religious beliefs, website design, internet and computer skill confidence, word of mouth, resistance to change, perceived usefulness, relative advantage, and complexity are the main factors related to e-government adoption. The research paper has highlighted that the government in Jordan should be sensitive to the dynamics of social and cultural life in Jordan in formulating the response needed from citizens when introducing e-government services as a new channel of interaction with government.

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