Computers in Human Behavior 53 (2015) 189–203

Contents lists available at ScienceDirect

Computers in Human Behavior

journal homepage: www.elsevier.com/locate/comphumbeh

Full Length Article

The imperative of influencing citizen attitude toward e-government adoption and use

Omar Al-Hujran [a], Mutaz M. Al-Debei [b,*], Akemi Chatfield [c], Mahmoud Migdadi [a]

[a] Department of Management Information Systems, The King Talal Faculty of Business and Technology, Princess Sumaya University for Technology, Jordan
[b] Department of Management Information Systems, Business School, The University of Jordan, Jordan
[c] School of Information Systems and Technology, Faculty of Engineering and Information Sciences, University of Wollongong, Australia

ARTICLE INFO

Article history:
Received 17 March 2015
Revised 8 May 2015
Accepted 12 June 2015

Keywords:
E-government adoption
Attitude
Technology Acceptance Model (TAM)
Culture
Trust
Perceived public value

ABSTRACT

With the imperative of e-government for better transparency, accountability and public services, the problem of low-level citizen adoption of e-government services has been recognized in developed and developing countries. This pressing problem needs socio-technological, political, and cultural perspectives. In this study we develop an integrative research model by extending extant Technology Acceptance Model through the incorporation of a set of social, political, and cultural constructs: trust, perceived public value, and national culture. The model is then tested using a large-scale, multi-site survey research of 413 Jordanian citizens. Our results find strong evidence that citizen attitude toward using e-government services is the most significant determinant of citizen intention to adopt and use e-government services. Citizen attitude, in turn, is jointly determined by perceived public value and perceived ease of use. These results have managerial implications that the government needs to pay closer attention to influencing citizen attitude toward using e-government services.

1. Introduction

Electronic government (e-government) refers to the use of information and communication technology (ICT) tools and applications to enhance government transparency and accountability in public administration by improving public services delivery, access to information and services and public governance (Chatfield & Alhujran, 2009; Ciborra & Navarra, 2005; Panagiotopoulos, Al-Debei, Fitzgerald, & Elliman, 2012). The characteristics of good public governance include improved transparency and accountability. The promise of greater government transparency and accountability is often the reason for developing countries to take part in e-government projects (Chatfield, Alanazi, & Alanazi, 2015; Chen, Jubilado, Capistrano, & Yen, 2015; Ciborra & Navarra, 2005). Indeed, the main emphasis of e-government is not the implementation of new ICT systems to automate the traditional public service processes or add a new online service delivery channel *per se*, but rather it aims at improving transparency, accountability and governance of the public sector services and in so doing it can improve government performance and create new public value for citizens and businesses (Chatfield & AlHujran, 2007; Panagiotopoulos et al., 2012; Wang, 2014).

Achieving these goals require greater public engagement in e-government services. However, despite the noticeable efforts in this domain, many governments worldwide are still facing the pressing problem of low-level adoption of e-government services by citizens (Al-Hujran, Aloudat, & Altarawneh, 2013; Belanger & Carter, 2008; Gupta, Dasgupta, & Gupta, 2008; Hamner & Al-Qahtani, 2009; Kumar, Mukerji, Butt, & Persaud, 2007; Lin, Fofanah, & Liang, 2011; Rana & Dwivedi, 2015). This pressing problem needs urgent research attention since the success of e-government is highly dependent upon citizens' adoption and use of e-government services (Carter & Bélanger, 2005; Ozkan & Kanat, 2011; Panagiotopoulos et al., 2012). This highlights the importance of understanding the multi-faceted factors that may influence citizens' adoption of e-government services. Although technology adoption from the user perspective has been extensively studied in such contexts as e-commerce and the Internet (Al-Debei & Al-Lozi, 2014; Tung & Rieck, 2005), relatively few studies have focused on citizen adoption of e-government services (Beldad, De Jong, & Steehouder, 2011; Gauld, Goldfinch, & Horsburgh, 2010).

Unlike adoption and use of various information technologies in private-sector organizations which are mostly mandatory, citizen adoption of e-government services is *voluntary* and often occurs in turbulent socio-political environments such as changes in political leadership and budget cuts. As such, the adoption of

* Corresponding author.
E-mail addresses: m.aldebei@ju.edu.jo, mdebei@hotmail.com (M.M. Al-Debei).

http://dx.doi.org/10.1016/j.chb.2015.06.025
0747-5632/

e-government services should not only be examined from a technological perspective; but also a more comprehensive, integrative approach, which accommodates social, political, and cultural perspectives, is needed to advance our knowledge in this domain (Carter, Christian Shaupp, Hobbs, & Campbell, 2012). Undoubtedly, without a clear and coherent understanding of what motivates the public to use e-government services, governments would not be able to make informed strategic decisions to increase the e-government adoption and use (Gilbert, Balestrini, & Littleboy, 2004; Carter et al., 2012).

Prior research on e-government adoption has largely focused on the developed countries. In consequence, little attention was received to examine e-government adoption and use in developing nations in general and the Arab nations in particular. This gap is significant given cultural and social characteristics of developing countries including Arab nations differ significantly from those of the Western nations (Baker, Al-Gahtani, & Hubona, 2010; Olasina & Mutula, 2015). Due to these differences, it is reasonable to expect that the factors influencing individuals' acceptance of technologies in Arab countries might fundamentally differ from those related to industrialized Western countries, such as those of North America and Western Europe (Al-Gahtani, 2004). For example, in Saudi Arabia, technology acceptance success factors have been reported to differ from those of developed nations (Al-Gahtani, 2004). Therefore, by drawing and extending extant Technology Acceptance Model (TAM), in this paper we aim to investigate the influence of socio-technological, political, and cultural factors on citizens' intention to adopt and use e-government services.

The remainder of this paper is organized as follows. In the next section, relevant literature is reviewed and then the integrative research model development and hypotheses are presented and discussed. In Section 3, research methods employed in this study are described. Data analysis and results are presented in Section 4, while in Section 5 a discussion of the results is offered. In Section 6, the implications of this research for theory and practice are discussed. Finally in Section 7, the conclusions of this research including research limitations and future research directions are presented.

2. Literature review and research model

2.1. E-government in Jordan

Jordan is "one of the rare countries in the Middle East with a history of commitment to good governance and ICT-related initiatives" (Ciborra & Navarra, 2005: p.142). In recent years, Jordan's efforts to provide e-government services to public have been recognized (Alomari, Sandhu, & Woods, 2010). Although e-government program in Jordan is still at the initial stages, Jordan has developed relatively advanced e-government service delivery capabilities in two-way interaction and e-democracy (Chatfield & Alhujran, 2009). In addition, the United Nations' e-government readiness reports ranked Jordan as one of the top 5 among the Arab countries (UN, 2003, 2005). Nonetheless, e-government in Jordan faces the problem of low usage levels of these electronic services (Al-Hujran et al., 2013; Al-Jaghoub, Al-Yaseen, & Al-Hourani, 2010; Mofleh, Wanous, & Strachan, 2008; Rana & Dwivedi, 2015). More than 85% of Jordanians never used e-government websites and electronic services (Al-Jaghoub et al., 2010).

Moreover, Jordan mainly relies on global experts to set up e-government initiatives (Elsheikh, Cullen, & Hobbs, 2008) and perceive such initiatives as pure IT projects. This is in most cases catastrophic as little attention is given to the specific national context of Jordan in terms of culture, politics, social issues, traditions, trust, public values, literacy and gender segregation. According to Heeks (2003), the major reason behind e-government initiatives failure in developing countries is the gap experienced between the design and reality of e-government systems implementation. Accordingly, we believe that it is imperative for the government of Jordan to consider the social, demographic, political, and cultural influences in the e-government context so as to make it successful. Considering these factors would help countries including Jordan reducing the gap between design and reality of e-government under specific context of each country.

For Jordan, a better understanding of the factors that influence citizen adoption of e-government services is a critically important policy issue. Improvements in this domain would be helpful to policy makers in regards to the design of e-government services. It would also be useful to public organizations in improving their service delivery processes so as to increase the level of citizens' adoption of these services. Moreover, government agencies would find this valuable in retaining their current users and attracting new ones.

2.2. E-government adoption

Citizen adoption of e-government services is an important issue for the success of e-government initiatives (Carter & Bélanger, 2005; Ozkan & Kanat, 2011; Liu et al., 2014). Indeed, e-government services cannot improve public service delivery if they are not used by the public (Panagiotopoulos & Al-Debei, 2010). This raises the question of how to increase the level of citizen adoption of such services, especially in Arab countries. However, to date, there has been little research exploring factors that determine the adoption of e-government services by citizens in developing countries (Lin et al., 2011) including the Middle East (Alomari, Woods, & Sandhu, 2012). A recent review of the e-government literature conducted by Joseph (2013) also showed that there is an urgent need for e-government research studies that focus on regions such as the Middle East.

Prior research classified extant e-government adoption literature into two streams (Reddick, 2005). On the one hand, the first stream studies e-government adoption from the supply-side perspective, which reflects factors that are important or related to the supplier of public services (i.e. local, state, or national government). To date, this perspective explored factors that affect government organizations' adoption and implementation of e-government services (Coursey, Yang, Kasserkert, & Norris, 2007; Ferro & Sorrentino, 2010; Norris & Moon, 2005; Norris & Reddick, 2013; Li & Feeney, 2014). Examples of these factors include organization characteristics (e.g. size, red tape, culture and top management support), IT infrastructure, financial resources, and skilled personnel. On the other hand, the second stream studies e-government adoption from the demand-side perspective which focuses on "customers" of public services (i.e. citizens). Some scholars have utilized a number of theoretical frameworks to examine citizens' adoption of service provided by the government (e.g. Lin et al., 2011; Al-Hujran et al., 2013; Liu et al., 2014; Rana & Dwivedi, 2015). Examples of these factors include trust, risk, security, usefulness, and ease of use, attitude, quality, satisfaction, and computer experience.

However, while much of the literature has focused on the supply-side e-government adoption, relatively little is known about why and under what circumstances the public adopt e-government services (Gauld et al., 2010; Reddick, 2005). Therefore, the focus of this paper is citizen adoption (demand-side) of e-government services. In addition, even though there has been some initial efforts to study the citizens' adoption of e-government services in Jordan (Alomari et al., 2012; Mofleh et al., 2008; Alawneh, Al-Refai, & Batiha, 2013; Al-Hujran et al., 2013), none have examined how cultural (i.e. national culture) and

socio-political (i.e. perceived public value) factors impact Jordanians decision to adopt e-government services as this study does. Moreover, we believe that the current study is also significant as knowledge society development requires informed and active citizens (Lytras and de Pablos, 2011) through their positive attitude toward and actual use of innovative technologies such as e-government. Therefore, while our study does not directly address citizens' contribution to the knowledge society development, the research findings would have positive implications for government and citizens in developing the knowledge society through the adoption and use of e-government.

2.3. Research model and hypotheses development

Previous research have utilized and employed a number of theories in order to explain or predict users' adoption and acceptance of technologies. This includes Technology Acceptance Model (TAM) (Davis, 1989), Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975), Theory of Planned Behavior (TPB) (Ajzen, 1985), Innovation Diffusion Theory (IDT) (Rogers, 1995), Unified Theory for Acceptance and Use of Technology (UTAUT) (Venkatesh, Morris, Davis, & Davis, 2003), and others. The model for this study (Fig. 1) is a revision and extension of the most widely adopted model in explaining acceptance and adoption of technologies, which is TAM with a set of social, political, and cultural constructs following an extensive literature review so as to end up with a comprehensive and unique model to examine the adoption intention of e-government services by Jordanian citizens.

In this study we have viewed e-government as an organizational-level innovation system, but it can be also viewed as a regional-level innovation system when e-government adoption diffuses widely in the society. In this regard, our research findings may make an important contribution to regional knowledge management research, which lags behind organizational knowledge management research (Zhao and de Pablos, 2011).

2.3.1. Technology Acceptance Model

The Technology Acceptance Model (TAM) (Davis, 1989) is one of the various models that IT/IS researchers have used to predict and explain the underlying factors that motivate users to accept and adopt new technologies. This model (demonstrated in Fig. 2) is an adaptation of the TRA from psychology specifically tailored to model user acceptance of Information Technology (IT) (Ajzen & Fishbein, 1980). TAM has been widely applied in acceptance behavior across a broad range of IT innovations such as e-commerce (e.g. Gefen, Elena, & Straub, 2003; Pavlou and Fygenson; 2006), mobile commerce (e.g. Fang, Chan, Brzezinski, & Xu, 2006), e-learning (e.g. Cheung & Vogel, 2013; Mohammadi, 2015), mobile government (e.g. Liu et al., 2014; Wang, 2014) and e-government (e.g. Al-Hujran et al., 2013; Alomari et al., 2012; Carter & Bélanger, 2005; Lin et al., 2011). TAM theorizes that one's behavioral intentions are determined by two specific belief constructs (perceived usefulness, and perceived ease of use). Davis (1989: p. 320) defined perceived usefulness (PU) as "the degree to which a person believes that using a particular system would enhance his or her job performance". Perceived ease of use (PEOU) refers to "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989: p. 320).

The use of TAM in this research provides a number of theoretical advantages. First, it has been extensively tested and validated across different settings. Second, it was subjected to theoretical extensions (Venkatesh & Davis, 2000). Third, TAM has reliable instruments and is empirically sound (Chen, Fan, & Farn, 2007). However, the TAM's fundamental constructs do not fully reflect the specific influences of technological and usage-context factors that may influence users' acceptance (Moon & Kim, 2001) Therefore, perceived usefulness, and perceived ease of use may not fully explain users' attitudes and behavioral intentions toward the use of e-government services if not integrated with other cultural and social-related factors. Its fundamental constructs do not fully reflect the variety of user task environment and constraints (Fu, Farn, & Chao, 2006). Moreover, TAM does not take into account the human and social factors. Therefore, social and human and other factors might be integrated with TAM to improve its predictive power (Taylor & Todd, 1995).

The original TAM also theorizes the attitude construct plays a central role, because PU and PEOU of a technology will positively influence positive or negative attitude toward the system. The attitude, in turn, influence the intention to use the system, which positively affects the actual use of the system. Also, PU of the system is predicted to be positively influenced by PEOU (Davis, Bagozzi, & Warshaw, 1989). Moreover, TAM theorizes that external variables are fully mediated by PU and PEOU (Heijden, 2003). In short, if the central goal of TAM is to predict IT adoption from an IT perspective, it can be argued that the TAM is preferable for the reason that it focuses on system design characteristics. TAM predicts whether individuals will accept and use a certain system.

However, although the original TAM included the attitude toward behavior as a mediator between the beliefs and the intention to use, some researchers question the full mediation of beliefs by attitude (e.g. Davis et al., 1989; Taylor & Todd, 1995). For example, Davis et al. (1989) did not find empirical support for

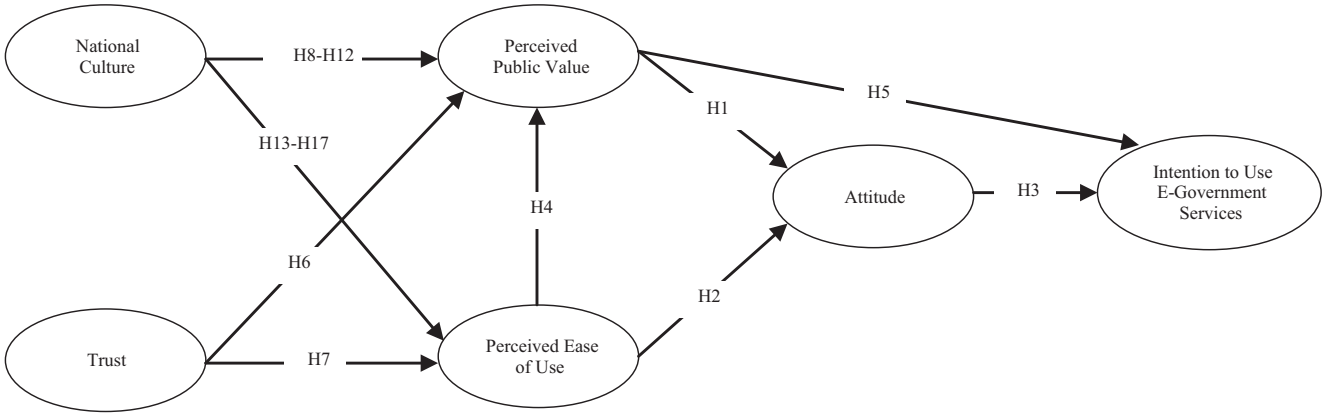

Fig. 1. The study model.

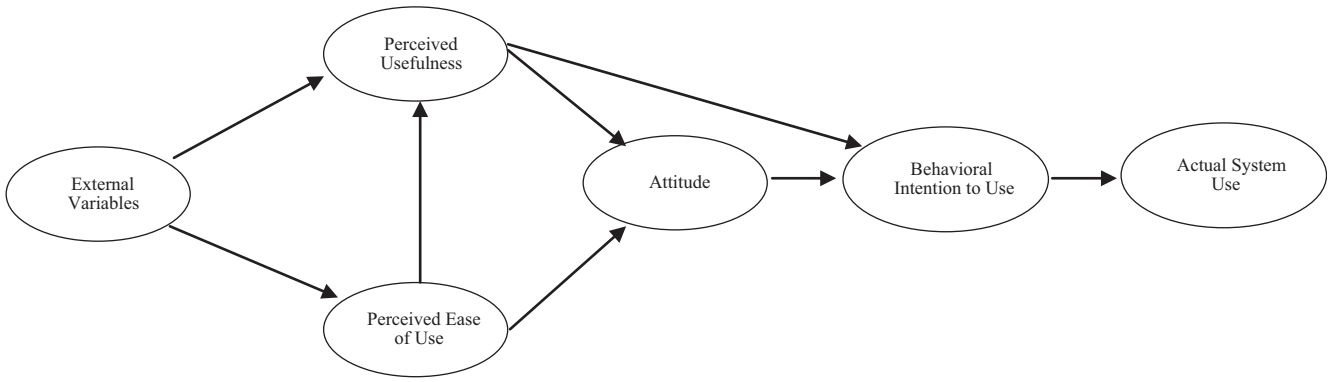

Fig. 2. TAM Source: Davis et al. (1989).

the significant role of the attitude as a full mediator. This is explained by Davis and Venkatesh (1996: p. 20) as: "in work settings, people may use a technology even if they do not have a positive attitude (affect) toward using the same, because it may provide productivity enhancement (i.e. be useful)". Based on this empirical evidence, the newer variations of TAM, such as TAM2 (Venkatesh & Davis, 2000) and the Unified Theory of Acceptance and Use (UTAUT) (Venkatesh et al., 2003), have dropped the attitude construct. These new models have created a direct path between perceived usefulness and intention in order to reflect performance expectancy impact, regardless of individual's affective reaction toward the new IT/IS (Davis et al., 1989).

Other studies (e.g. Taylor & Todd, 1995; Thompson, Higgins, & Howell, 1991) have also reported similar results, and found that attitude may not be an important determinant of an intention to use especially in the settings where the intention to use will be formed based on performance considerations (e.g. organizational context), rather than on personal preferences (Taylor & Todd, 1995). However, although Davis et al. (1989) asserted that the attitude did not fully mediate the effect of beliefs on intention, they also concluded that "more research is needed to identify the conditions under which attitude mediates the belief-intention link" (Davis et al., 1989: p. 999). This motivated Yang and Yoo (2004) to revisit this construct. They suggested that attitude has two components: affective and cognitive. The affective component refers to "how much the person likes the object of thought, while the cognitive component refers to an individual's specific beliefs related to the object of thought" (Yang & Yoo, 2004: p. 20). The result of their study showed that the attitude construct is a significant factor in explaining the IS usage when the cognitive component is involved.

Similar to Yang and Yoo (2004), many other studies (e.g. Bhattacherjee & Premkumar, 2004; Davis, 1989, 1993; Heijden, 2003) support the significant role the attitude construct plays in predicting intentions to use IT/IS systems. Furthermore, in voluntary settings such as e-commerce, e-banking, mobile government and e-government, attitude has been shown to have a high correlation with behavioral intentions to use (Al-Debei, Al-Lozi, & Papazafeiropoulou, 2013; Alomari et al., 2012; Chang, Li, Hung, & Hwang, 2005; Hung, Chang, & Kuo, 2013; Hung, Chang, & Yu, 2006; Lin et al., 2011; Pavlou & Fygenson, 2006; Shumaila, Gordon, & John, 2007; Susanto & Goodwin, 2013). Pavlou and Fygenson (2006) argued that although prior TAM research showed that the attitude does not fully mediate the effect of beliefs on intention to use IT, these results should not be generalized to other domains such as e-commerce. Other studies (e.g. Hartwick & Barki, 1994; Venkatesh, Thong, & Xu, 2012) also observed the effect of an important difference between voluntary and mandatory users of IT/IS systems. For example, Venkatesh et al. (2012) argued that new contexts such as consumer adoption of a technology (i.e. voluntary context) differ than employee adoption of such technology (i.e. mandatory context). New context may result in several types of important changes in adoption theories such as creating new relationships, changing originally theorized relationships, and altering the direction of relationships. Each change can reveal the breakdown of theories that results in the creation of new knowledge (Venkatesh et al., 2012). Mandatory users mainly formed their intentions to use the system based on their normative beliefs. These users used the system when they believe that other people who are important to them expected them to use it. However, voluntary users formed their intentions to use the system mostly based on their attitude toward using the system (Hartwick & Barki, 1994). Therefore, in this study we argue for the significant role of attitude in predicting the behavioral intention to use e-government services, due to the voluntary nature of using these services. In light of the above literature review, the original TAM which includes the attitude construct was chosen as a grounding theory for this study.

In addition, prior adoption studies argued that the usefulness construct in TAM is inadequate in explaining the adoption of new IT/IS systems especially non-organizational information system where the adopters are consumers and not simply technology users (Al-Debei et al., 2013; Kaasinen, 2005; Kim, Chan, & Gupta, 2007; Lin, Wu, Hsu, & Chou, 2012). TAM was originally developed to understand the initial adoption intention of technologies in organizational settings. It is important to highlight that those technologies are mandatory used by employees for work purposes as productivity tools. Therefore, the above-mentioned studies have replaced perceived usefulness by perceived value. While usefulness is the major concern for technology users in organizations, for rational consumers it is value maximization (Al-Debei et al., 2013; Lin et al., 2012). In the services marketing and IS/IT literature, perceived value has been proposed as a broader concept as it's not only includes rational utility but also defines the key features of the product/service that are valued by the users and other stakeholders (Al-Debei et al., 2013). Similarly, e-government is a non-organizational information system, not a productivity tool, and it is used mainly by public in non-work settings. Citizens may be viewed as consumers who expect to receive public value from e-government serves usage. Hence, this study also proposed to replace perceived usefulness by perceived public value construct. Perceived usefulness may not indicate adequate motivation to acquire e-government services as it usually only measures productivity and performance issues.

The value concept has been frequently used in different literatures, such as economics, marketing, accounting, finance, strategy, production, management, and IS/IT (Al-Debei et al., 2013; Woodall, 2003). Public value concept originated from the public administration literature (Kelly, Mulgan, & Muers, 2002; Moore, 1995), but

started to appear in the e-government context (Chatfield & AlHujran, 2007; Grimsley & Meehan, 2007; Hellang & Flak, 2012; Karkin & Janssen, 2014; Karunasena & Deng, 2012; Mills, Carter, & Belanger, 2010; Wang, 2014; Osmani, 2015). According to Kelly et al. (2002: p. 4), public value refers to "the value created by government through services, laws regulation and other actions". It is a way of capturing all the dimensions of government performance to assure its relevance to the stakeholders (Kelly et al., 2002). In e-government, the stakeholders include citizens, business enterprises, other governments, and government employees. Chatfield and AlHujran (2007: p. 2) explained the public value concept as follows: "public value is predicated on these stakeholders' preferences, because only the stakeholders -not the government-, can determine what is truly of value to them. However, public value is also predicated on the new capability of e-government to understand the different stakeholders' needs and provide services they value, thereby creating public value that justifies and legitimizes the sustained government spending on e-government. In other words, the legitimacy of e-government as a whole largely depends on how well it creates public value by producing the outcomes, services and trust that are aligned with e-government strategic objectives". Although it is a significant challenge for government agencies, citizens expect to get improved government information and services, good governance, transparency, and accountability through e-government services provision (Grimsley & Meehan, 2007). In fact, e-government is often seen as an effective means to create public value for citizens through providing convenient channels to access public services, saving time and money, and promoting greater interaction between citizens and their governments (Karunasena & Deng, 2012). Creating public value to citizens and meeting their needs should therefore guide the operations of public organizations on the provision of public services (Moore, 1995).

Surprisingly, there are few studies which have suggested the link between public value and e-government and mobile government adoption (e.g. Gilbert et al., 2004; Osmani, 2015; Wang, 2014). Although they have not used the term perceived public value, Gilbert et al. (2004) found that citizen willingness to use e-government services is increased if they perceived that the electronic delivery of public services is saving their money and time (i.e. economic value and time value). Saving citizens' time and money is a subset and main elements of the perceived public value concept. In addition, perceived public value includes citizen perceptions about the enhancements in the accessibility and convenience of government services and information (Alhujran, 2009). E-government, through its various channels of service delivery, provides citizens with timely information and services in a more convenient and easier way which satisfies citizens' needs, and allows them to improve their efficiency and complete tasks in anytime and anywhere (Osmani, 2015; Wang, 2014).

Based on the above discussion and assumptions of the original TAM, the following hypotheses are proposed:

H1. There is a direct and positive relationship between perceived public value and attitude toward using e-government services.

H2. There is a direct and positive relationship between perceived ease of use and attitude toward using e-government services.

H3. There is a direct and positive relationship between attitude and behavioral intentions to use e-government services.

H4. There is a direct and positive relationship between perceived ease of use and perceived public value of e-government services.

H5. There is a direct and positive relationship between perceived public value and behavioral intentions to use e-government services.

2.3.2. TAM extension: external variables

This study also extends the modified TAM with culture and trust as external variables so as explain citizens' adoption of e-government services. A discussion related to each external variable is provided below.

2.3.2.1. Trust. Trust is emerging as a potentially important factor leading to IT acceptance. Given the uncertain and dynamically changing environment of the Internet, trust was theorized as a direct determinant of behavioral intentions. Several definitions of trust have been found in the literature. Barney and Hansen (1994: p. 176) define trust as "the mutual confidence that no party to an exchange will exploit another's vulnerabilities". Trust is important in online environments because of the associated risk (Langton & McKnight, 2006). Therefore, prior e-government research has highlighted the importance of trust as a determinant of citizen adoption of e-government services (e.g. Alomari et al., 2012; Carter & Bélanger, 2005; Chen et al., 2015; Schaupp, Carter, & McBride, 2010; Susanto & Goodwin, 2013; Warkentin, Gefen, Pavlou, & Rose, 2002). A review of the e-government adoption literature conducted by Titah and Barki (2006) also showed that trust is among the most significant factors affecting e-government adoption, since citizens must trust the government as well as the enabling technologies. However, citizens usually have concerns about information privacy and misuse of their personal information when this information is shared over the Internet (Carter & Bélanger, 2005). Traditionally, it is suggested that trust could be categorized into trust in the entity providing the service (i.e. party trust) and trust in the technology through which the service is provided (i.e. institution-based trust) (McKnight, Choudhury, & Kacmar, 2002; Pavlou, 2003; Belanger and Carter, 2008; Schaupp et al., 2010). This traditional view of trust is adopted in this study. Trust of government that provides public services and trust of the electronic channel (i.e. the Internet) through which these services are delivered is required to encourage citizens to engage in e-government services (Carter & Bélanger, 2005; Schaupp et al., 2010). Carter and Bélanger (2005: p. 9) emphasize that "citizens must have confidence in both the government and the enabling technologies" for successful e-government solutions.

Indeed, the integration of trust with TAM variables has its own theoretical and empirical support (Aloudat, Michael, Chen, & Al-Debei, 2014; Gefen et al., 2003; Liébana-Cabanillas, Sánchez-Fernández, & Muñoz-Leiva, 2014; Pavlou, 2003). Liébana-Cabanillas et al. (2014) found that trust is an antecedent of the ease of use based on the fact that trust in electronic systems reduces users' need to understand, control and survey the situation, making their task easier and free of efforts. The impact of trust on perceived public value has been also confirmed by different scholars (e.g. Grimsley & Meehan, 2007; Sirdeshmukh, Singh, & Sabol, 2002). However, although trust and public value are essential variables in service science and e-government literatures, and most researchers agree they are related (e.g., Mills et al., 2010; Wang, 2014), few studies tried to empirically examine their relationships. Trust can increase outcome expectations based on the benefits of a trustworthy relation (Belanche, Casaló, Flavián, & Schepers, 2014). If the service provider cannot be trusted to behave in accordance with the user's confident beliefs, then there is no reason why she or he should anticipate to gain any benefits or values from using the service (Pavlou, 2003). In addition, higher level of trust is assumed to reduce uncertainty which in turn will

create a positive perspective regarding the value of the services and provide expectations of an acceptable level of performance (Aloudat et al., 2014). In the light of the above discussion, trust is postulated to positively influence perceived ease of use and perceived public value of e-government services and, therefore, the following hypotheses could be proposed:

H6. There is a direct and positive relationship between trust and perceived public value of e-government services.

H7. There is a direct and positive relationship between trust and perceived ease of use of e-government services.

2.3.2.2. Culture. Introducing technology to a new context requires proper considerations of important cultural differences (Srite & Karahanna, 2006). In some countries cultural differences can act as a barrier to ICT adoption and it is therefore essential to consider the cultural settings of these countries while formulating strategies for increasing ICT usage (Erumban & De Jong, 2006). There are different levels of culture; for example, national cultural level and organizational cultural level. In our research paper, we direct our attention toward national culture as we address the e-government adoption problem at the national level. Hofstede (1997: p. 21) defines national culture as "the collective programming of the mind which distinguishes the members in one human group from another". Although there are major concerns regarding Hofstede's national culture framework (Ford, Connelly, & Meister, 2003), Leidner and Kayworth (2006) found, after an extensive literature review of national culture studies, that over 60% related research used one or more of Hofstede's cultural dimensions. This is indeed an objective measure showing the strength and impact of this framework. Hofstede (1997) identified five dimensions of cultural variation. These dimensions have been conceptually defined (Hofstede, 1997) as follows:

- *Power Distance (PD):* the extent to which the less powerful members of group or society accept and expect that power is unequally distributed;
- *Uncertainty Avoidance (UA):* the extent to which the members of group or society feel threatened by unknown situations;
- *Individualism vs. Collectivism (IC):* the extent to which individuals are integrated into groups;
- *Masculinity vs. Femininity (MF):* the extent to which gender roles are assigned in a culture;
- *Long-Term vs. Short-Term Orientation (LSO):* a society's preference to be more forward looking or future oriented.

The link between IT/IS adoption and culture has been widely recognized. Many studies were conducted to examine the relationship between adoption of IT/IS and both national and organizational culture (e.g. Al-Gahtani, 2004; Twati, 2006; Carter & Weerakkody, 2008; Baker et al., 2010; Hu, Al-Gahtani, & Hu, 2014; Olasina & Mutula, 2015). These studies highlighted the importance of culture, and how it is linked to the success of IT/IS adoption and use. Researchers also explored the impact of the national culture on TAM variables (e.g. Akour, Alshare, Miller, & Dwairi, 2006; Al-Hujran, Al-dalahmeh, & Aloudat, 2011; Srite & Karahanna, 2006; Twati, 2006; Veiga, Floyd, & Dechant, 2001). However, these studies provided inconsistence results regarding how the cultural dimensions influence the core variables of TAM. In e-government domain, prior literature also suggests that the national culture is significantly correlated with e-government readiness (Khalil, 2011), e-government development (Zhao, 2013) and citizen adoption of e-government services (Al-Hujran et al., 2011; Warkentin et al., 2002; Zhao, 2013). However, it can be noted that there is a scarcity of empirical and rigorous research about the impact of national culture on e-government adoption in both developed and developing countries which encourages further research in this domain. The absence of considering cultural consequences in e-government adoption may lead to the failure of the adoption process (Nurdin, Stockdale, & Scheepers, 2010).

The Arab world is considered as one of the most complex cultural and social systems in the world (Straub, Loch, & Hill, 2001). Hofstede's dimensions of culture suggest that Arab countries differ significantly from Western cultures such as the U.S. The values of the Arabian culture normally displays a close-knit social structure. Such a social structure usually raises conformance pressures on its members (Sidani & Thornberry, 2009). These unique characteristics of the Arabian culture may limit the applicability and negatively affect the validity of existing theoretical models and frameworks that are immersed in Western cultures. Perceptions, attitudes, and behavioral intentions of users in the Arab world are very much influenced by important others including family, friends, and colleagues. Arabian users' perceptions, attitudes, and behavioral intentions are also influenced by social norms and values and other aspects related to religion (Hu et al., 2014). However, despite high levels of investment, the process of e-government adoption in Arab countries, including Jordan, is slow and the low level of usage among public is common (Al-Hujran et al., 2013; Hamner & Al-Qahtani, 2009; Shafi & Weerakkody, 2009). Therefore, the complex cultural system of the Arab world provides a rich context to determine the extent to which the national culture can be used to explain citizen's adoption of e-government services in this unique cultural context.

As it is widely recognized and accepted, Hofstede's framework of culture has been chosen in this study as a theoretical background to assess the impact of national culture on e-government adoption in Jordan. However, previous research suggested that the influence of national culture dimensions on individuals' intentions to use IS/IT might be mediated by perceived usefulness (which is replaced by perceived public value in this study) and ease of use constructs (Akour et al., 2006; Hill, Loch, Straub, & El-Sheshai, 1998; Straub, 1994). Thus the following hypotheses were posed:

H8. There is a direct and positive relationship between uncertainty avoidance and the perceived public value of e-government services.

H9. There is a direct and positive relationship between power distance and the perceived public value of e-government services.

H10. There is a direct and positive relationship between masculinity/femininity and the perceived public value of e-government services.

H11. There is a direct and positive relationship between individualism/collectivism and the perceived public value of e-government services.

H12. There is a direct and positive relationship between long-term/short-term orientation and the perceived public value of e-government services.

H13. There is a direct and positive relationship between uncertainty avoidance and the perceived ease of use of e-government services.

H14. There is a direct and positive relationship between power distance and the perceived ease of use of e-government services.

H15. There is a direct and positive relationship between masculinity/femininity and the perceived ease of use of e-government services.

H16. There is a direct and positive relationship between individualism/collectivism and the perceived ease of use of e-government services.

H17. There is a direct and positive relationship between long-term/short-term orientation and the perceived ease of use of e-government services.

3. Research methodology

3.1. Instrument and data collection

This is a quantitative cross-sectional study that utilized the survey questionnaire as the main instrument for data collection. Hence, a self-completion, well-structured questionnaire was developed based on previous literature and was then distributed to a random sample where participation was completely voluntary. Sekaran (2003) stresses the importance of choosing the questionnaire language that approximates the level of understanding of the respondents. Given that the majority of the Jordanians are communicating in Arabic language, questionnaire items of the study have been translated into Arabic language. The English version of the questionnaire has been translated into Arabic language by two independent translators. The Arabic version which has been translated by the first translator has been translated back to English by the second translator. The same was repeated to the second translator's version. The two versions in both languages have been compared to resolve any differences. The final version following the amendments was then used for data collection.

Prior research showed that educated Jordanian citizens are the early adopters of the Internet (Al-Jaghoub & Westrup, 2003), which suggests that they may likely be early adopters and users of e-government in Jordan. In addition, Jordan has a young population, according to the government statistics, 70% of Jordanian citizens is under the age of 30 (Jordan's Department of Statistics, 2008). Therefore, the questionnaire surveys were distributed to a total of 1500 participants; internet cafe users and university students who were randomly chosen from 4 different universities in Jordan. A total of 988 surveys were returned, achieving the return rate of 65.9%. Out of the 988 surveys collected, 13 were considered unusable because they had many missing response items. The remaining 975 surveys were used in the analysis. Of the 975 respondents, 413 (42.4%) were e-government information and services adopters, while the remaining 57.6% were non-adopters. This means that they only filled in the background information. Only the e-government adopters' responses (a sample size of 413) were used for testing the research hypotheses.

3.2. Measurement scales

The constructs of interest in this study were "Behavioral Intention" (BI), "Attitude" (ATT), "Perceived Public Value" (PPV), "Perceived Ease of Use" (PEOU), "Trust" (TR), , and "Culture" (CUL). Following Hofstede (1997), the five dimensions of culture were utilized which are: "Uncertainty Avoidance" (UA), "Power Distance", "Individualism vs. Collectivism" (IC), "Masculinity vs. Femininity" (MF), "Long-Term vs. Short-Term Orientation" (LSO). The theoretical constructs were operationalized using validated items drawn from prior research. The TAM scale of PEOU was measured using items adopted from Davis (1989) and Davis et al. (1989). TAM scales of ATT were adopted from Taylor and Todd (1995). BI items were adopted from Malhotra and Galletta (1999) and Pavlou (2003). Culture items were adopted from Hofstede (1980, 1991) and Srite and Karahanna (2006). The measurement of trust (TR) was adopted from Carter and Bélanger (2005). PPV items were adopted from Pura (2005). All items were measured using a five-point Likert-type scale ranging from "Strongly agree" to "Strongly disagree". Table 1 lists the questionnaire items.

3.3. Sample profile

The descriptive statistics of the sample showed that 61.7% of the respondents were male and 38.3% were female. Respondents aged between 20 and 30 years formed the largest age group and represented 68.5% of the sample. The majority of respondents were bachelor degree students (i.e. undergraduate) studying either in the field of business or in the field of Information Technology (IT) and represented 79.2% of the sample. Most of respondents (81.9%) have more than 3 years of computer experience and their usage of Internet can be characterized as frequent and common. Nevertheless, respondents clearly indicated their lack of experience in e-commerce activities and also revealed that their access to e-government services was significantly less frequent than their access and usage of Internet in general. The details are shown in Table 2.

4. Data analysis and results

This study utilizes the Structural Equation Modeling (SEM) approach with Partial Least Square (PLS) as an analysis method. PLS has been widely used for theory testing and validation. PLS examines the psychometric properties and provides appropriate evidences on whether relationships might or might not exist (Fornell & Larcker, 1981). In this study, we performed data analysis in accordance with a two-stage methodology (Anderson & Gerbing, 1988) using SmartPLS 2.0 M3. The first step was to test the content, convergent, and discriminant validity of constructs using the measurement model, while the second step was to test the structural model and hypotheses.

4.1. Measurement model

First, we assessed the reliability and validity of the measurement instrument using content, reliability, and convergent validity criteria. The content validity of our survey instrument was established in two ways. First, the constructs along with their measures which are used in this study were already validated in previous studies as they were all adopted from the existing literature. Second, the results of the pre-test we undertook with subject-matter experts assured content validity of the survey instrument. For reliability of the scale, Cronbach's alpha, which is a common method used to measure the reliability and internal consistency of scales, was used (Cronbach, 1970). Hair et al. (2006) suggested that the reliability of the scale is generally accepted if the value of Cronbach's alpha for each construct is equal or greater than 0.70. The constructs included within the study's model exhibit a high degree of internal consistency as the values of Cronbach's alpha ranged from 0.70 (BI) to 0.86 (MF) as shown in Table 3.

A Composite Reliability (CR) and Average Variance Extracted (AVE) tests were conducted to measure convergent validity.

Table 1
Measurement scales.

Constructs	Items	Measures
Uncertainty Avoidance	UA1	It is important to have job requirements and instructions spelled out in detail so that people always know what they are expected to do
	UA2	Rules and regulation are important because they inform workers what the organization expects of them
	UA3	People should avoid making changes when their outcomes are uncertain
	UA4	Order and structure are very important in a work environment
Power Distance	PD1	Managers should be careful not to ask the opinions of subordinates too frequently, otherwise the manager might appear to be weak and incompetent
	PD2	Manager should make most decisions without consulting subordinates
	PD3	Employees should not question their manager's decisions
	PD4	Manager should not ask subordinates for advice, because they might appear less powerful
	PD5	In general, the manager, not the employees should have the last word
Masculinity/Femininity	MF1	It is preferable to have a man in a high level position rather than a woman
	MF2	Men usually solve problems with logical analysis; women usually solve problems with intuition
	MF3	Solving organizational problems usually requires an active forcible approach which is typical of men
Individualism/Collectivism	IC1	Individual rewards are not as important as group welfare
	IC2	Group success is more important than individual success
	IC3	I think it's more important to give priority to group interests rather than personal ones
Long-Term vs. Short-Term Orientation	LSO1	Respect for tradition hampers performance
	LSO2	The exchange of favors and gifts is not necessary to excel
	LSO3	Upholding one's personal image makes little difference in goal achievement
Trust	TR1	E-government portal and/or Ministry's website(s) have enough safeguards (e.g. security policy) to make me feel comfortable using it to access government services
	TR2	I feel assured that legal and technological structures adequately protect me from any problems on using e-government portal and/or Ministry's website(s)
	TR3	In general, e-government portal and/or Ministry's website(s) are now a robust and safe environment to access government services
	TR4	In general, I think I can trust e-government portal and/or Ministry's website(s)
	TR5	In my opinion, e-government portal and/or Ministry's website(s) are trustworthy
Perceived Public Value	PPV1	Using e-government portal and/or Ministry's website(s) to access government services is an efficient way to manage my time
	PPV2	I value the convenience of using e-government portal and/or Ministry's website(s) to access government services
	PPV3	Using e-government portal and/or Ministry's website(s) to access government services increase the government transparency
	PPV4	Using e-government portal and/or Ministry's website(s) to access government services increase the government accountability
	PPV5	Overall, I believe that using e-government portal and/or Ministry's website(s) to access government services provide good public value
Perceived Ease of Use	PEOU1	Learning how to use e-government portal and/or Ministry's website(s) to access government services is easy for me
	PEOU2	I find it easy to use e-government portal and/or Ministry's website(s) to find what I want
	PEOU3	My interaction with e-government portal and/or Ministry's website(s) to access government services is clear and understandable
	PEOU4	E-government portal and/or Ministry's website(s) is flexible to interact with
	PEOU5	Overall, I find using e-government portal and/or Ministry's website(s) to access government services easy to use
Attitude	ATT1	Using the e-government portal and/or Ministry's website(s) to access government services is a good idea
	ATT2	I like the use of e-government portal and/or Ministry's website(s) to access government services
	ATT3	Using the e-government portal and/or Ministry's website(s) to access government services would be pleasant
Behavioral Intention	BI1	I intend to use the e-government portal and/or Ministry's website(s) to access government services frequently
	BI2	I predict that I should use the e-government portal and/or Ministry's website(s) to access government services in the future

Fornell and Larcker (1981) suggested that the value of CR for each construct must exceed 0.70 while the value of the AVE must exceed 0.50 for the convergent validity to be assured. The CR and AVE values for the constructs included in the study model are all above acceptable levels. Moreover, the standardized path loadings for all indicators were above 0.55 and thus they are all significant (Falk & Miller, 1992), except MF3 and LSO2. Given that the path loading for MF3 was the weakest, so it was deleted first and the model were reassessed again. Thereafter and given that the only left item with path loading lower than 0.55 is LSO2, it was finally deleted and the model final assessment were measured. As such, content validity, reliability, and convergent validity of the measurement instrument are all satisfactorily met in this research. As for discriminant validity, it is actually established when the square root of the AVE from the construct is greater than the correlation shared between the construct and other constructs in the model (Chin, 1998). The discriminant validity of the measurement instrument is confirmed in this study given that the square root of the AVE from each construct is larger than all other cross-correlations with other constructs (see Table 4).

4.2. Structural model

In addition to PLS Algorithm, the bootstrapping procedure was used and we selected 413 cases, 5000 samples, and the no sign changes option to evaluate the significance of the path coefficients (Hair, Sarstedt, Ringle, & Mena, 2012). The results of the PLS-SEM analysis show, as in Table 5, the structural model estimation and evaluation of the formulated hypotheses. Results indicated that out of the five cultural constructs, only uncertainty avoidance ($\beta = 0.16$, $p \leqslant 0.001$; $\beta = 0.18$, $p \leqslant 0.001$, respectively) and power distance ($\beta = -0.17$, $p \leqslant 0.05$; $\beta = 0.13$, $p \leqslant 0.05$, respectively) have significant and direct effects on both perceived public and perceived ease of use. Results also revealed that trust is also a major predictor of perceived public value and perceived ease of use ($\beta = 0.07$, $p \leqslant 0.01$; $\beta = 0.24$, $p \leqslant 0.001$, respectively). Further, perceived ease of use was found to be one of the major predictors of perceived public value ($\beta = 0.46$, $p \leqslant 0.001$). The results also indicated that attitude is a direct function of both perceived public value and perceived ease of use ($\beta = 0.40$, $p \leqslant 0.001$; $\beta = 0.13$, $p \leqslant 0.001$, respectively). Finally, it was found that perceived public

Table 2
Sample profile.

		Frequency	Percentage (%)
Gender	Male	255	61.7
	Female	158	38.3
Age	Less than 20	51	12.3
	20–30	283	68.5
	31–40	57	13.8
	41–50	17	4.1
	More than 50	5	1.2
Education	Bachelor	347	84.0
	Postgraduate	66	16.0
Field of study	Business	218	52.8
	IT	149	36.1
	Others	46	11.1
Computer experience	Less than 3 Years	75	18.2
	3–5 Years	104	25.2
	More than 5 Years	234	56.7
Internet usage	Few times monthly	40	9.7
	Several times monthly	73	17.7
	Few times weekly	83	20.1
	Several times weekly	105	25.4
	Several times daily	112	27.1
E-commerce usage	Never used	330	79.9
	Once a month	67	16.2
	Few times monthly	8	1.9
	Several times weekly	3	0.7
	Few times weekly	4	0.10
	Few times daily	1	0.2
E-government usage	Once a month	246	59.6
	Few times monthly	99	24.0
	Several times Weekly	32	7.7
	Once a day	11	2.7
	Several times daily	25	6.1

value has no direct significant effect on behavioral intention and that attitude directly and positively influences behavioral intentions to use e-government services ($\beta = 0.63$, $p \leqslant 0.001$) and thus attitude fully mediates the relationship between perceived public value and behavioral intention to use e-government services.

As in Table 6, The R^2 value for each endogenous latent construct (i.e. perceived ease of use, perceived public value, attitude, and behavioral intention to use e-government services) demonstrate an acceptable prediction level in empirical research. The coefficient of determination R^2, which is the central criterion for the structural model's assessment (Klarner, Sarstedt, Hoeck, & Ringle, 2013), has a high value of 0.402 for this study's key target construct; i.e. behavioral intention to use e-government services. This value of R^2 which is above 25% demonstrates a highly acceptable prediction level in empirical research (Gaur & Gaur, 2006; Griffith, 1996). Indeed, the high R^2 proves the model's predictive validity (Hair et al., 2012). We support the prior finding through the use of Q^2 predictive relevancy measure (Stone, 1974). The obtained Q^2 values, after running the blindfolding procedure (Chin, 1998) with an omission distance $D = 8$, were (0.13) for perceived ease of use, (0.22) for perceived public value, (0.16) for attitude, and (0.30) for behavioral intention. All of the Q^2 values are well above zero; indicating the predictive relevance of the PLS path model. Finally we measured the f^2 values (i.e. effect size) for perceived public value, and perceived ease of use on attitude as well as for perceived public value and attitude on behavioral intention. As shown in Table 6, the effect size for perceived ease of use on attitude is small, the collective effect size of perceived public value on attitude and behavioral intention is medium, and the effect size of attitude on behavioral intention is large.

Table 3
Results of reliability and convergent validity tests.

Constructs	Items	Factor loading	AVE	CR	Cronbach α
Uncertainty Avoidance	UA1	0.680	0.620	0.866	0.795
	UA2	0.851			
	UA3	0.827			
	UA4	0.781			
Power Distance	PD1	0.612	0.615	0.887	0.843
	PD2	0.861			
	PD3	0.850			
	PD4	0.853			
	PD5	0.712			
Masculinity/Femininity	MF1	0.960	0.877	0.934	0.864
	MF2	0.912			
	MF3	0.072 (Deleted)			
Individualism/ Collectivism	IC1	0.880	0.649	0.847	0.737
	IC2	0.791			
	IC3	0.739			
Long-Term vs. Short-Term Orientation	LSO1	0.927	0.672	0.800	0.846
	LSO2	0.375 (Deleted)			
	LSO3	0.695			
Trust	TR1	0.741	0.583	0.875	0.822
	TR2	0.735			
	TR3	0.776			
	TR4	0.796			
	TR5	0.768			
Perceived Public Value	PU1	0.771	0.541	0.855	0.787
	PU2	0.790			
	PU3	0.721			
	PU4	0.746			
	PU5	0.643			
Perceived Ease of Use	PEOU1	0.728	0.614	0.888	0.842
	PEOU2	0.746			
	PEOU3	0.800			
	PEOU4	0.830			
	PEOU5	0.810			
Attitude	ATT1	0.839	0.706	0.878	0.791
	ATT2	0.870			
	ATT3	0.809			
Behavioral Intention	BI1	0.902	0.766	0.868	0.701
	BI2	0.848			

5. Discussion

Despite the increasing provision of public services electronically, the adoption of these services by citizens is still limited especially in developing countries. Therefore, it is necessary to understand in more detail which factors help increase the intention to use these e-government services not only from a theoretical perspective, but also from managerial and empirical perspectives. To explore this issue, this study has modified TAM model by substituting the perceived usefulness construct with perceived public value and integrated the revised model with other important and related external factors. The present paper is instrumental in expanding the general body of knowledge by supporting some previous findings, as well as raising possible concerns about other previous results. The study also strongly supports the value-based Technology Acceptance Model, in which perceived public value plays an important role in determining citizens' attitude toward e-government services.

As hypothesized, perceived public value and attitude were significant predictors of usage intentions, and together, accounted for 40.2% of the variance in the intention to use e-government services ($R^2 = 0.402$). An interesting insight coming from in our research is that citizens' intention to use e-government services is most

Table 4
Descriptive analysis and discriminant validity.

	Mean	SD	UA	PD	MF	IC	SLO	TR	PPV	PEOU	ATT	BI
UA	**4.24**	**0.67**	**1.00**									
PD	**2.45**	**1.00**	−0.20	**1.00**								
MF	**2.76**	**1.24**	−0.05	0.40	**1.00**							
IC	**4.02**	**0.86**	0.20	0.04	0.22	**1.00**						
SLO	**3.93**	**0.77**	0.26	−0.04	0.02	0.31	**1.00**					
TR	**3.50**	**0.77**	0.10	0.18	0.06	0.09	0.18	**1.00**				
PPV	**3.96**	**0.64**	0.35	−0.12	−0.002	0.12	0.11	0.29	**1.00**			
PEOU	**3.70**	**0.72**	0.25	0.10	−0.02	0.10	0.14	0.37	0.56	**1.00**		
ATT	**4.18**	**0.71**	0.47	−0.12	−0.04	0.20	0.16	0.17	0.47	0.36	**1.00**	
BI	**4.03**	**0.73**	0.40	−0.10	0.01	0.11	0.02	0.18	0.37	0.33	0.63	**1.00**

Note: The square roots of the constructs' AVE values are shown in the diagonal line (in bold); non-diagonal elements are latent variable correlations.

Table 5
Hypotheses testing results.

Hypotheses	Beta (β)	t value	p value
H1: PPV → ATT	0.40	6.24***	0.00
H2: PEOU → ATT	0.13	6.93***	0.00
H3: ATT → BI	0.63	19.28***	0.00
H4: PEOU → PPV	0.46	8.94***	0.00
H5: PPV → BI	0.09	1.69	0.09
H6: TR → PPV	0.07	2.79**	0.01
H7: TR → PEOU	0.24	4.23***	0.00
H8: UA → PPV	0.16	4.29***	0.00
H9: PD → PPV	−0.17	2.07*	0.04
H10: MF → PPV	0.09	0.93	0.35
H11: IC → PPV	0.004	0.14	0.89
H12: LSO → PPV	−0.05	0.90	0.37
H13: UA → PEOU	0.18	2.91***	0.00
H14: PD → PEOU	0.13	2.35*	0.02
H15: MF → PEOU	−0.08	1.54	0.12
H16: IC → PEOU	0.007	0.14	0.89
H17: LSO → PEOU	0.02	0.41	0.68

* $p \leqslant 0.05$.
** $p \leqslant 0.01$.
*** $p \leqslant 0.001$.

Table 6
Results of R^2, Q^2, and f^2.

Endogenous latent variables	R^2 (%)	Q^2	f^2
Perceived Ease of Use (PEOU)	41.3	0.13	0.008
Perceived Public Value (PPV)	22.3	0.22	0.16
Attitude (ATT)	23.9	0.16	0.45
Behavioral Intention (BI)	40.2	0.30	–

dominantly influenced by their attitude toward using these services ($\beta = 0.63$, $p < 0.001$), and it is not directly influenced by perceived public value ($\beta = 0.09$, $p > 0.1$). This indicates that attitude is a powerful mediator between beliefs (perceived public value and perceived ease of use) and intention to use e-government services. This empirical evidence contradicts with the assertion made in prior research which argues that the inclusion of attitude is not meaningful (Davis et al., 1989; Taylor & Todd, 1995; Venkatesh & Davis, 2000; Venkatesh et al., 2003). Their assertion was justified by Davis and Venkatesh (1996, p. 20) as "in work settings, people may use a technology even if they do not have a positive attitude (affect) toward using the same because it may provide productivity enhancement (i.e. be useful)". In contrast, this research suggests otherwise. This contradiction may be explained by the voluntary nature of citizen adoption of e-government services. The difference between voluntary and mandatory users of IT/IS systems was observed in prior research on IS/IT adoption (Hartwick & Barki, 1994). Mandatory users mainly formed their intentions to use the system based on their normative beliefs. Voluntary users, on the other hand, formed their intentions to use the system mostly based on their attitude toward using this system (Hartwick & Barki, 1994). Therefore, we need to be cautious in generalizing the results of previous TAM studies to a different context such as e-government, where the adoption and use of ICTs and the electronic channel is strictly voluntary and in fact competing against alternative channels such as the traditional face-to-face government agency offices, mail and telephone services. In such voluntary adoption and use settings (e.g. e-commerce, e-banking, and e-government), attitude has been shown to have a high correlation with behavioral intentions to use (Chang et al., 2005; Hung et al., 2006, 2013; Pavlou & Fygenson, 2006; Susanto & Goodwin, 2013). For example, in line with our results, but based on a different theoretical grounding (i.e. the theory of planned behavior), Hung et al. (2013) found that the citizens' intention to use m-government services is mainly determined by their attitude toward using these services. Based on this discussion, it can be argued that the attitude construct should be included as a central variable that may likely influence citizen adoption and use of e-government services under the typical condition of voluntary adoption policy that currently prevails in the growing e-government development worldwide.

Consistent with previous TAM research, this study hypothesized that there is a positive relationship between perceived ease of use and citizens' attitude toward using e-government. Findings of this study demonstrated empirical support for this hypothesis. This finding is consistent with previous TAM research that tests and validates the consistent relationships between perceived ease of use and attitude (e.g. Chang et al., 2005; Davis, 1989; Venkatesh & Davis, 2000). Our findings have also empirically confirmed that perceived public value has a significant relationship with attitude, which is consistent with extant service science literature that argued that customer attitude was the result of customer perception of value received (Ducoffe, 1996; Kwun, 2011; Teo, Oh, Liu, & Wei, 2003). The value to public should therefore guide the operations of public agencies on the delivery of public service. This is because the ultimate goal of e-government programs is to create value for citizens (Moore, 1995). Public organizations can create public value for citizens through assuring high efficiency of their operation, providing convenient channels to access public services, saving time and money, and promoting greater interaction between citizens and their governments (Karunasena & Deng, 2012). In short, perceived public value and perceived ease of use were shown to be significant determinants of citizens' attitude toward using e-government services, suggesting that the government should make e-government services more valuable and usable. For example, governments could achieve this by increasing citizens' awareness about the value of using e-government services, providing e-government and ICT training workshops, and refining IT/IS systems selections to meet different citizens' needs.

Results also indicated perceived ease of use had a significant positive impact on perceived public value, suggesting that the

easier the e-government service is to use, the more beneficial and valuable citizens would perceive it. E-government provides citizens with timely and personalized information and services in a more convenient and easier way, which satisfies users' multi-level information needs, and helps users improve efficiency and complete tasks in anytime and anywhere (Wang, 2014) and therefore creating value for them. However, our finding is inconsistent with results obtained by Wang (2014). Although Wang's study initially hypothesized the significant effect of perceived ease of use on public value, findings of his study indicated otherwise. He justified this result by arguing that previous literature focused on pre-adoption stage while his study emphasis on post-adoption where users already have some experience about IS. Accordingly and based on the results of Wang (2014) and the results of the current study, we can induce that perceived ease of use is not an important predictor of attitude in post-adoption stages, while it is very significant in the initial adoption stage as in the case of the current study.

This study also hypothesized that there are positive relationships between trust and perceived public value and perceived ease of use. Findings of this study demonstrated empirical support for these two hypotheses. The results of the study indicated that trust has significant impacts on perceived public value, which in turn influences citizens' attitude to adopt e-government services. The possible justification is that if the e-government services are not trustworthy, there is no reason why the citizens should anticipate getting any value from using them. In addition, the results showed that trust has a positive impact on perceived ease of use. The possible explanation for that is trust makes using e-government services effortless, by reducing the need for checking every detail related to security and privacy. This finding is consistent with previous IT/IS adoption research (Liébana-Cabanillas et al., 2014; Pavlou, 2003).

Furthermore, the findings showed that only one cultural dimension (i.e. uncertainty avoidance) has a significant positive impact on perceived ease of use and perceived public value. The other four cultural dimensions: power distance, individualism, masculinity, and long-term orientation, has no discernible impacts on the citizens' beliefs. These findings are consistent with previous research (Warkentin et al., 2002). In their study, Warkentin et al. (2002) proposed that of the five cultural dimensions, power distance and uncertainty avoidance are the most likely to differentiate e-government adoption and use. These findings suggest that it is important to consider the differences and uniqueness of the country's specific cultural values when developing e-government services.

6. Implications and limitations

6.1. Implications for theory and research

This study makes a significant contribution to e-government adoption research from different perspectives. First, this study examines the impact of national culture on e-government take up from a citizen perspective. National culture may influence citizens' expectations, experiences, preferences and their attitudes toward e-government. However, there is a lack of empirical and rigorous research addressing the importance of national culture dimensions in e-government adoption (Zhao, 2013). This study contributes to a better understanding of how some national culture dimensions affects e-government adoption, and how to address the cultural issue. Second, there were inconsistent results regarding the role of attitude as mediator between users' beliefs and intention to use IT/IS systems, some researchers question the full mediation of beliefs by attitude (e.g. Davis et al., 1989; Taylor & Todd, 1995). Therefore, the newer variations of TAM, such as TAM2 (Venkatesh & Davis, 2000) and the Unified Theory of Acceptance and Use (UTAUT) (Venkatesh et al., 2003), have dropped the attitude construct. In contrast, in the present study we argued the significant role of attitude as a predictor of usage intentions in voluntary contexts such the e-government. An interesting finding coming from our research is that citizens' intention to use e-government services is most dominantly influenced by their attitude toward using these services. This study will help us to comprehend the difference of measuring IS adoption between voluntary setting of e-government and other information systems in mandatory settings. Third, this study has shown the importance of "perceived public value" in explaining citizens' intentions and behavior. Prior to our study, only limited number of research studies examined the role of public value in IT/IS success in governments' context (e.g. Wang, 2014), but not in the context of citizens adoption of e-government services. Based on our extensive search of the literature, our study appears to be among the first to empirically explore and confirm the significant impact of public value in determining citizens' attitude, intentions, and behavior.

6.2. Implications for practice

The primary objective of this study was to identify key factors that are likely influence citizen adoption of e-government services in developing countries. The study has fulfilled this objective. The results of this study have significant managerial implications for government policy makers, government agencies, and system developers who are working on developing e-government services. This research provides them with a practical and communicable checklist of cultural, social, political and technological factors, which are seamlessly integrated; and that cover the citizens' perspectives. This checklist should be considered as the cornerstone for any e-government project.

The citizens' survey showed that the dimensions – uncertainty avoidance; trust; perceived public value; perceived ease of use; and the attitude – contribute significantly to citizen adoption of e-government services in Jordan. Since Jordan and the other Arab countries are facing the problem of low-level of citizen adoption of e-government services, the research outcomes are believed to assist e-government officials and policy makers from Jordan and any other country with similar characteristics, to better position their strategies to encourage faster and more efficient adoption of these services. The outcomes of this study suggested that e-government officials need to pay attention to the dominant culture. For example, by providing the necessary training to alleviate anxiety could lead to better acceptance of IT/IS applications (Al-Gahtani, 2004) such as e-government.

Also, government agencies should provide services that are easy to use. Carter and Bélanger (2005) and Susanto and Goodwin (2013) suggested different ways to increase perceived ease of use. One is to provide online tutorials through the e-government websites to illustrate how citizens can use and transact with these service. Government agencies should also improve help and search facilities in their websites to enable citizens to effectively find the relevant information. Information on how to use the service can be provided as a brochure, a web page, and a 'help' feature on the e-government websites. In addition, citizens' feedback about e-government websites should be elicited and analyzed. This will enable government agencies to redesign their websites to present e-government services and information in a way that is easy for citizens to use. In addition to these suggested methods, the findings of this study showed that trust and culture had a positive impact on perceived ease of use. Therefore, it is important for government agencies to provide trustworthy services to the public, employ the necessary training to alleviate anxiety, and to

demonstrate the public value that the citizens may gain by using e-government services.

Given the dominant effect of perceived public value, it is also important for the government agencies to incorporate useful information and services into their websites. The provision of up-to-date and accurate information at an appropriate level of detail through e-government channels is valued. Also, these agencies should employ training and promotion approaches to develop citizens' beliefs of the value of the e-government services. In order to make the e-government services valuable, it is important to ensure that these services are easy to use and trustworthy. Moreover, trust has a significant impact on citizens' beliefs. Therefore, government agencies should increase the perception of trustworthiness by adopting and strategically communicating its information security policy on the government websites. As mentioned earlier, perceived public value goes far beyond the narrow definition of the TAM construct: 'perceived usefulness'. Although it is a significant challenge, government agencies need provide the public with improved government information and services, public governance, transparency, and accountability through e-government services provision (Grimsley & Meehan, 2007). Previous research suggested that public organizations can promote public value in several ways. For example, argued Karunasena and Deng (2012) that a citizen-centric e-government service delivery channel—simple and easy-to-remember website addresses, a web portal linking all websites, and a single window with all the services—are important features to consider when evaluating the public value of e-government.

6.3. Limitations

As with all studies, this study has its own limitations. This is a cross-sectional study that represents a slice of time and does not show how the citizen's attitude and behavior may change over time. Studies employing a longitudinal design would ascertain whether or not the citizen's attitude toward using e-government services changes over time, or not. Another limitation is derived from the geographical location of the current research (i.e. Jordan). Although, the findings are believed to be applicable to other Arab countries that share demographic characteristics with Jordan and provide their citizens with the same level of e-government services, these findings are not necessarily applicable to other Arab countries that lagged behind Jordan in terms of e-government implementation. Therefore, further study in different countries would most likely strengthen and validate the findings of this study.

7. Conclusions

This study deliberately integrates a combination of cultural, social, political, and technological factors to comprehensively study citizens' adoption of e-government services in developing countries, and more specifically in Jordan. This study modifies the Technology Acceptance Model (TAM) by replacing perceived usefulness with perceived public value and then integrates its revised version with culture and trust constructs. It is believed that the research model developed in this study can serve as a foundation for future research on citizen adoption of e-government services. The results of this study showed the significant impact of the TAM constructs along with the cultural, social, and political constructs that are added to the model on citizen adoption of e-government services. Interestingly, the findings also demonstrate that citizens' intention to use e-government services are most dominantly influenced by their attitudes. This finding suggests that attitude construct deserves more attention in the voluntary settings such as citizen adoption of e-government services due to its considerable influence on the usage intentions. In light of these findings, researchers and policy makers should consider the impact of these factors in order to increase the existing low-level of citizen adoption of e-government services in the Arab world including Jordan.

References

Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behaviour*. Englewood Cliffs, New Jersey: Prentice-Hall.

Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckman (Eds.), *Action-control: From cognition to behavior* (pp. 11–39). Heidelberg, Germany: Springer.

Akour, I., Alshare, K., Miller, D., & Dwairi, M. (2006). An exploratory analysis of culture, perceived ease of use, perceived usefulness, and internet acceptance: The case of Jordan. *Journal of Internet Commerce, 5*(3), 83–108.

Al-Debei, M. M., & Al-Lozi, E. (2014). Explaining and predicting the adoption intention of mobile data services: A value-based approach. *Computers in Human Behavior, 35*, 326–338.

Al-Debei, M. M., Al-Lozi, E., & Papazafeiropoulou, A. (2013). Why people keep coming back to Facebook: Explaining and predicting continuance participation from an extended theory of planned behaviour perspective. *Decision Support Systems, 55*(1), 43–54.

Al-Gahtani, S. (2004). Computer Technology Acceptance Success Factors In Saudi Arabia: An Exploratory Study. *Journal of Global Information Technology Management, 7*, 5–29.

Alawneh, A., Al-Refai, H., & Batiha, K. (2013). Measuring user satisfaction from e-Government services: Lessons from Jordan. *Government Information Quarterly, 30*(3), 277–288.

Alhujran, O. (2009). *Determinants of e-government services adoption in developing countries: A field survey and a case study*. PhD thesis. Australia: School of Information Systems and Technology, Faculty of Informatics, University of Wollongong.

Al-Hujran, O., Al-dalahmeh, M., & Aloudat, A. (2011). The role of national culture on citizen adoption of eGovernment services: An empirical study. *Electronic Journal of E-government, 9*(2), 93–106.

Al-Hujran, O., Aloudat, A., & Altarawneh, I. (2013). Factors influencing citizen adoption of e-government in developing countries: The case of Jordan. *International Journal of Technology and Human Interaction (IJTHI), 9*(2), 1–19.

Al-Jaghoub, S., Al-Yaseen, H., & Al-Hourani, M. (2010). Evaluation of awareness and acceptability of using e-government services in developing countries: The case of Jordan. *The Electronic Journal of Information Systems Evaluation, 13*(1), 1–8.

Al-Jaghoub, S., & Westrup, C. (2003). Jordan and ICT-led development: Towards a competition state? *Information Technology & People, 16*(1), 93–110.

Alomari, M., Sandhu, K., & Woods, P. (2010). Measuring social factors in e-government adoption in the hashemite Kingdom of Jordan. *International Journal of Digital Society (IJDS), 1*(2), 78–96.

Alomari, M., Woods, P., & Sandhu, K. (2012). Predictors for e-government adoption in Jordan: Deployment of an empirical evaluation based on a citizen-centric approach. *Information Technology & People, 25*(2), 207–234.

Aloudat, A., Michael, K., Chen, X., & Al-Debei, M. M. (2014). Social acceptance of location-based mobile government services for emergency management. *Telematics and Informatics, 31*(1), 153–171.

Anderson, J., & Gerbing, D. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin, 103*(3), 411–423.

Baker, E., Al-Gahtani, S., & Hubona, G. (2010). Cultural impacts on acceptance and adoption of information technology in a developing country. *Journal of Global Information Management, 18*(3), 35–58.

Barney, J., & Hansen, M. (1994). Trustworthiness as a source of competitive advantage. *Strategic Management Journal, 15*, 175–190.

Belanche, D., Casaló, L. V., Flavián, C., & Schepers, J. (2014). Trust transfer in the continued usage of public e-services. *Information & Management, 51*(2014), 627–640.

Belanger, F., & Carter, L. (2008). Trust and risk in e-government adoption. *Journal of Strategic Information Systems, 17*(2), 165–176.

Beldad, A., De Jong, M., & Steehouder, M. (2011). I trust not therefore it must be risky: Determinants of the perceived risks of disclosing personal data for e-government transactions. *Computers in Human Behavior, 27*(6), 2233–2242.

Bhattacherjee, A., & Premkumar, G. (2004). Understanding changes in belief and attitude toward information technology usage: A theoretical model and longitudinal test. *MIS Quarterly, 28*(2), 229–254.

Carter, L., & Bélanger, F. (2005). The utilization of e-government services: Citizen trust, innovation and acceptance factors. *Information Systems Journal, 15*(1), 5–25.

Carter, L., & Weerakkody, V. (2008). E-government adoption: A cultural comparison. *Information Systems Frontiers, 10*(4), 473–482.

Carter, L., Christian Shaupp, L., Hobbs, J., & Campbell, R. (2012). The role of security and trust in the adoption of online tax filing. *Transforming Government: People, Process and Policy, 5*(4), 303–318.

Chang, I., Li, Y., Hung, W., & Hwang, H. (2005). An empirical study on the impact of quality antecedents on tax payers' acceptance of internet tax-filing systems. *Government Information Quarterly, 22*(3), 389–410.

Chatfield, A. T., & Alhujran, O. (2009). A cross-country comparative analysis of e-government service delivery among Arab countries. *Information Technology for Development, 15*(3), 151–170.

Chatfield, A. T., & Alanazi, J. M. (2015). Collaborative governance matters to e-government interoperability: An analysis of citizen-centric integrated interoperable e-government implementation in Saudi Arabia. *International Journal of Public Administration in the Digital Age (IJPADA), 2*(3), 24–44.

Chatfield, A. T., & AlHujran, O. (2007). E-government evaluation: A user-centric perspective for public value proposition. In *Proceedings of the international conference on e-learning, e-business, enterprise information systems, and e-government* (pp. 53–59). USA: CSREA Press.

Chen, C., Fan, Y., & Farn, C. (2007). Investigating factors affecting the adoption of electronic toll collection: A transaction cost economics perspective. In: *Proceedings of the 40th annual Hawaii international conference on system sciences, HICSS 2007* (pp. 107–116), Hilton Waikoloa Village Resort, Waikoloa, Big Island, Hawaii, 3–6 January 2007.

Chen, J. V., Jubilado, R. J. M., Capistrano, E. P. S., & Yen, D. C. (2015). Factors affecting online tax filing – An application of the IS Success Model and trust theory. *Computers in Human Behavior, 43*, 251–262.

Cheung, R., & Vogel, D. (2013). Predicting user acceptance of collaborative technologies: An extension of the technology acceptance model for e-learning. *Computers & Education, 63*, 160–175.

Chin, W. W. (1998). The partial least squares approach to structural equation modeling. *Modern Methods for Business Research, 295*(2), 295–336.

Ciborra, C., & Navarra, D. (2005). Good governance, development theory, and aid policy: risks and challenges of e-government in Jordan. *Information Technology for Development, 11*(2), 141–159.

Coursey, D., Yang, K., Kasserkert, K., & Norris, D. (2007). E-gov adoption in U.S. local governments: Bridging public management and institutional explanations in a pooled time series model. In *The 9th public management research conference*, Tucson, Arizona.

Cronbach, L. (1970). *Essentials of psychology testing*. New York: Harper & Row.

Davis, F. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319–340.

Davis, F. (1993). User acceptance of information technology: System characteristics, user perceptions and behavioral impacts. *International Journal of Man-Machine Studies, 38*(3), 475–487.

Davis, F., Bagozzi, R., & Warshaw, P. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science, 35*(8), 982–1005.

Davis, F., & Venkatesh, V. (1996). A critical assessment of potential measurement biases in the technology acceptance model: Three experiments. *International Journal of Human-Computer Studies, 45*(1), 19–45.

Ducoffe, R. H. (1996). Advertising value and advertising on the web. *Journal of Advertising Research, 36*(5), 21–35.

Elsheikh, Y., Cullen, A., & Hobbs, D. (2008). E-government in Jordan: challenges and opportunities'. *Transforming Government: People, Process and Policy, 2*(2), 83–103.

Erumban, A. A., & De Jong, S. B. (2006). Cross-country differences in ICT adoption: A consequence of culture? *Journal of World Business, 41*(4), 302–314.

Falk, R. F., & Miller, N. B. (1992). *A primer for soft modeling*. University of Akron Press.

Fang, X. W., Chan, S., Brzezinski, J., & Xu, S. (2006). Moderating effects of task type on wireless technology acceptance. *Journal of Management Information Systems, 22*(3), 123–157.

Ferro, E., & Sorrentino, M. (2010). Can intermunicipal collaboration help the diffusion of e-government in peripheral areas? Evidence from Italy. *Government Information Quarterly, 27*(1), 17–25.

Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intentions and behavior: An introduction to theory and research*. Boston: Addison-Wesley.

Ford, D. P., Connelly, C. E., & Meister, D. B. (2003). Information systems research and Hofstede's culture's consequences: An uneasy and incomplete partnership. *IEEE Transactions on Engineering Management, 50*(1), 8–25.

Fornell, C., & Larcker, D. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39–50.

Fu, J. R., Farn, C. K., & Chao, W. P. (2006). Acceptance of electronic tax filing: A study of taxpayer intentions. *Information & Management, 43*(1), 109–126.

Gauld, R., Goldfinch, S., & Horsburgh, S. (2010). Do they want it? Do they use it? The 'Demand-Side' of e-Government in Australia and New Zealand. *Government Information Quarterly, 27*(2), 177–186.

Gaur, A. S., & Gaur, S. S. (2006). *Statistical methods for practice and research: A guide to data analysis using SPSS*. Sage.

Gefen, D., Elena, K., & Straub, D. (2003). Trust and TAM in online shopping: An integrated model. *MIS Quarterly, 27*(1), 51–90.

Gilbert, D., Balestrini, P., & Littleboy, D. (2004). Barriers and benefits in the adoption of e-government. *International Journal of Public Sector Management, 17*(4), 286–301.

Griffith, D. A. (1996). Some guidelines for specifying the geographic weights matrix contained in spatial statistical models. *Practical Handbook of Spatial Statistics*, 65–82.

Grimsley, M., & Meehan, A. (2007). E-government information systems: Evaluation-led design for public value and client trust. *European Journal of Information Systems, 16*(2), 134–148.

Gupta, B., Dasgupta, S., & Gupta, A. (2008). Adoption of ICT in a government organization in a developing country: An empirical study. *Journal of Strategic Information Systems, 17*(2), 140–154.

Hair, J. F., Black, W. C., Babin, J. B., Anderson, R. E., & Tatham, R. L. (2006). *Multivariate data analysis* (6 ed.). New Jersey: Prentice Hall.

Hair, J. F., Sarstedt, M., Ringle, C. M., & Mena, J. A. (2012). An assessment of the use of partial least squares structural equation modeling in marketing research. *Journal of the Academy of Marketing Science, 40*(3), 414–433.

Hamner, M., & Al-Qahtani, F. (2009). Enhancing the case for Electronic Government in developing nations: A people-centric study focused in Saudi Arabia. *Government Information Quarterly, 26*, 137–143.

Hartwick, J., & Barki, H. (1994). Explaining the role of user participation in information system use. *Management Science, 40*(4), 440–465.

Heeks, R. (2003). Most eGovernment- for-development projects fail: How can risks be reduced? <http://unpan1.un.org/intradoc/groups/public/documents/CAFRAD/UNPAN011226.pdf> (accessed 02.09.14).

Heijden, H. (2003). Factors influencing the usage of websites: The case of a generic portal in the Netherlands. *Information & Management, 40*(6), 541–549.

Hellang, Ø., & Flak, L. S. (2012). Assessing effects of e-government initiatives based on a public value framework. In *Electronic government* (pp. 246–259). Berlin Heidelberg: Springer.

Hill, C. E., Loch, K. D., Straub, D., & El-Sheshai, K. (1998). A qualitative assessment of Arab culture and information technology transfer. *Journal of Global Information Management (JGIM), 6*(3), 29–38.

Hofstede, G. (1980). *Culture's consequences*. Beverly Hills: Sage publication.

Hofstede, G. (1991). *Organizations and cultures: Software of the mind*. New York: McGrawHill.

Hofstede, G. (1997). *Cultures and organizations: Software of the mind*. New York: McGraw-Hill.

Hu, P. J., Al-Gahtani, S. S., & Hu, H. (2014). Arabian workers' acceptance of computer technology: A model comparison perspective. *Journal of Global Information Management (JGIM), 22*(2), 1–22.

Hung, S. Y., Chang, C. M., & Kuo, S. R. (2013). User acceptance of mobile e-government services: An empirical study. *Government Information Quarterly, 30*(1), 33–44.

Hung, S.-Y., Chang, C.-M., & Yu, T.-J. (2006). Determinants of user acceptance of the e-government services: The case of online tax filing and payment system'. *Government Information Quarterly, 23*(1), 97–122.

Joseph, R. C. (2013). A structured analysis of e-government studies: Trends and opportunities. *Government Information Quarterly, 30*(4), 435–440.

Kaasinen, E. (2005). *User acceptance of mobile services: Value, ease of use, trust and ease of adoption*. PhD thesis. Finland: Tampere University of Technology.

Karkin, N., & Janssen, M. (2014). Evaluating websites from a public value perspective: A review of Turkish local government websites. *International Journal of Information Management, 34*(3), 351–363.

Karunasena, K., & Deng, H. (2012). Critical factors for evaluating the public value of e-government in Sri Lanka. *Government Information Quarterly, 29*(1), 76–84.

Kelly, G., Mulgan, G. & Muers, S. (2002). Creating public value: An analytical framework for public sector reform <http://www.cabinetoffice.gov.uk/upload/assets/www.cabinetoffice.gov.uk/strategy/public_value2.pdf> (accessed 21.06.14).

Khalil, O. E. (2011). E-government readiness: Does national culture matter? *Government Information Quarterly, 28*(3), 388–399.

Kim, H. W., Chan, H. C., & Gupta, S. (2007). Value-based adoption of mobile internet: An empirical investigation. *Decision Support Systems, 43*(1), 111–126.

Klarner, P., Sarstedt, M., Hoeck, M., & Ringle, C. M. (2013). Disentangling the effects of team competences, team adaptability, and client communication on the performance of management consulting teams. *Long Range Planning, 46*(3), 258–286.

Kumar, V., Mukerji, B., Butt, I., & Persaud, A. (2007). Factors for successful e-government adoption: A conceptual framework. *Electronic Journal of e-Government, 5*(1), 63–76.

Kwun, D. J. W. (2011). Effects of campus foodservice attributes on perceived value, satisfaction, and consumer attitude: A gender-difference approach. *International Journal of Hospitality Management, 30*(2), 252–261.

Langton, N. & McKnight, H. (2006). Using expectation disconfirmation theory to predict technology trust and usage continuance intentions <http://misrc.umn.edu/workshops/2006/spring/harrison.pdf> (accessed 21.01.14).

Leidner, D., & Kayworth, T. (2006). A review of culture in information systems research: Toward a theory of information technology culture conflict. *MIS Quarterly, 30*(1), 357–399.

Li, M. H., & Feeney, M. K. (2014). Adoption of electronic technologies in local US governments distinguishing between e-services and communication technologies. *The American Review of Public Administration, 44*(1), 75–91.

Liébana-Cabanillas, F., Sánchez-Fernández, J., & Muñoz-Leiva, F. (2014). Antecedents of the adoption of the new mobile payment systems: The moderating effect of age. *Computers in Human Behavior, 35*, 464–478.

Lin, F., Fofanah, S., & Liang, D. (2011). Assessing citizen adoption of e-government initiatives in Gambia: A validation of the technology acceptance model in information systems success. *Government Information Quarterly, 28*(2), 271–279.

Lin, T. C., Wu, S., Hsu, J. S. C., & Chou, Y. C. (2012). The integration of value-based adoption and expectation–confirmation models: An example of IPTV continuance intention. *Decision Support Systems, 54*(1), 63–75.

Liu, Y., Li, H., Kostakos, V., Goncalves, J., Hosio, S., & Hu, F. (2014). An empirical investigation of mobile government adoption in rural China: A case study in Zhejiang province. *Government Information Quarterly, 31*(3), 432–442.

Lytras, M., & de Pablos, P. O. (2011). Software technologies in knowledge society [Special issue]. *Journal of Universal Computer Science, 17*(9), 1219–1221.

Malhotra, Y. & Galletta, D. (1999). Extending the technology acceptance model to account for social influence: Theoretical bases and empirical validation. In *Thirty-second annual Hawaii international conference on system sciences-volume 1*, Hawaii, USA.
McKnight, D. H., Choudhury, V., & Kacmar, C. (2002). The impact of initial consumer trust on intentions to transact with a web site: A trust building model. *The Journal of Strategic Information Systems, 11*(3), 297–323.
Mills, A., Carter, L., & Belanger, F. (2010). Conceptualizing public service value in e-government services. *AMCIS 2010 Proceedings Paper, 346*, 1–9.
Mofleh, S., Wanous, M., & Strachan, P. (2008). The gap between citizens and e-government projects: The case for Jordan. *Electronic Government, an International Journal, 5*(3), 275–287.
Mohammadi, H. (2015). Investigating users' perspectives on e-learning: An integration of TAM and IS success model. *Computers in Human Behavior, 45*, 359–374.
Moon, J. W., & Kim, Y. G. (2001). Extending the TAM for a World-Wide-Web context. *Information & Management, 38*(4), 217–230.
Moore, M. H. (1995). *Creating public value: Strategic management in government*. London: Harvard University Press.
Norris, D., & Moon, M. (2005). Advancing e-government at the grassroots: Tortoise or hare? *Public Administration Review, 65*(1), 64–75.
Norris, D. F., & Reddick, C. G. (2013). Local e-government in the United States: Transformation or incremental change? *Public Administration Review, 73*(1), 165–175.
Nurdin, N., Stockdale, R., & Scheepers, H. (2010). Examining the role of the culture of local government on adoption and use of e-government services. In *E-government, e-services and global processes* (pp. 79–93). Berlin Heidelberg: Springer.
Olasina, G., & Mutula, S. (2015). The influence of national culture on the performance expectancy of e-parliament adoption. *Behaviour & Information Technology, 34*(5), 492–505.
Osmani, M. (2015). *Examining the antecedents of public value in e-government services*. Doctoral Dissertation. Brunel University London.
Ozkan, S., & Kanat, I. E. (2011). E-Government adoption model based on theory of planned behavior: Empirical validation. *Government Information Quarterly, 28*(4), 503–513.
Panagiotopoulos, P., & Al-Debei, M. M. (2010). Engaging with citizens online: Understanding the role of ePetitioning in local government democracy. *Internet, Politics, Policy*, 16–17.
Panagiotopoulos, P., Al-Debei, M. M., Fitzgerald, G., & Elliman, T. (2012). A business model perspective for ICTs in public engagement. *Government Information Quarterly, 29*(2), 192–202.
Pavlou, P. (2003). Consumer acceptance of electronic commerce: Integrating trust and risk with the technology acceptance model. *International Journal of Electronic Commerce, 7*(1), 69–103.
Pavlou, P., & Fygenson, M. (2006). Understanding and predicting electronic commerce adoption: An extension of the theory of planned behavior. *MIS Quarterly, 30*(1), 115–143.
Pura, M. (2005). Linking perceived value and loyalty in location-based mobile services. *Managing Service Quality, 15*, 509–538.
Rana, N. P., & Dwivedi, Y. K. (2015). Citizen's adoption of an e-government system: Validating extended social cognitive theory (SCT). *Government Information Quarterly, 32*(2), 172–181.
Reddick, C. (2005). Citizen interaction with e-government: From the streets to servers? *Government Information Quarterly, 22*(1), 38–57.
Rogers, E. M. (1995). *Diffusion of innovations* (4th ed.). New York: Free Press.
Schaupp, L. C., Carter, L., & McBride, M. E. (2010). E-file adoption: A study of US taxpayers' intentions. *Computers in Human Behavior, 26*(4), 636–644.
Sekaran, U. (2003). *Research method for business: A skill building approach*. New York: John Wiely and Sons.
Shafi, A. S., & Weerakkody, V. (2009). Understanding citizens' behavioural intention in the adoption of e-government services in the state of Qatar. In *ECIS* (pp. 1618–1629).
Shumaila, Y., Gordon, R., & John, G. (2007). Technology acceptance: A meta-analysis of the TAM: Part 2. *Journal of Modelling in Management, 2*(3), 251–280.
Sidani, Y. M., & Thornberry, J. (2010). The current Arab work ethic: Antecedents, implications, and potential remedies. *Journal of Business Ethics, 91*(1), 35–49.
Sirdeshmukh, D., Singh, J., & Sabol, B. (2002). Consumer trust, value, and loyalty in relational exchanges. *Journal of Marketing, 66*(1), 15–37.
Srite, M., & Karahanna, E. (2006). The role of espoused national cultural values in technology acceptance. *MIS Quarterly*, 679–704.
Stone, M. (1974). Cross-validatory choice and assessment of statistical predictions. *Journal of the Royal Statistical Society: Series B (Methodological)*, 111–147.
Straub, D. W. (1994). The effect of culture on IT diffusion: E-Mail and FAX in Japan and the US. *Information Systems Research, 5*(1), 23–47.
Straub, D., Loch, K., & Hill, C. (2001). Transfer of information technology to the Arab world: A test of cultural influence modeling. *Journal of Global Information Management, 9*(4), 141–172.
Susanto, T. D., & Goodwin, R. (2013). User acceptance of SMS-based e-government services: Differences between adopters and non-adopters. *Government Information Quarterly, 30*(4), 486–497.
Taylor, S., & Todd, P. (1995). Understanding information technology usage: A test of competing models. *Information Systems Research, 6*(2), 144–176.
Teo, H. H., Oh, L. B., Liu, C., & Wei, K. K. (2003). An empirical study of the effects of interactivity on web user attitude. *International Journal of Human-Computer Studies, 58*(3), 281–305.
Thompson, R., Higgins, C., & Howell, M. (1991). Personal computing: Toward a conceptual model of utilization. *MIS Quarterly, 15*(1), 125–143.
Titah, R., & Barki, H. (2006). E-government adoption and acceptance: A literature review. *International Journal of Electronic Government Research (IJEGR), 2*(3), 23–57.
Tung, L., & Rieck, O. (2005). Adoption of electronic government services among business organizations in Singapore. *Journal of Strategic Information Systems, 14*(4), 417–440.
Twati, J. (2006). *Societal and organisational culture and the adoption of management information systems in Arab Countries*. PhD thesis. Brisbane, Australia: Griffith University.
UN (2003). World public sector report 2003: E-government at the crossroads. New York: Department of Economic and Social Affairs, United Nations.
UN (2005). *UN Global e-government readiness report 2005: From e-government to e-inclusion* <http://unpan1.un.org/intradoc/groups/public/documents/un/unpan021888.pdf> (accessed .1.10.14).
Veiga, J., Floyd, S., & Dechant, K. (2001). Towards modeling the effects of national culture on IT implementation and acceptance. *Journal of Information Technology, 16*(3), 145–158.
Venkatesh, V., & Davis, F. (2000). A theoretical extension of the technology adoption model: Four longitudinal field studies. *Management Science, 46*, 186–204.
Venkatesh, V., Morris, M., Davis, G., & Davis, F. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly, 27*(3), 425–478.
Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly, 36*(1), 157–178.
Wang, C. (2014). Antecedents and consequences of perceived value in Mobile Government continuance use: An empirical research in China. *Computers in Human Behavior, 34*, 140–147.
Warkentin, M., Gefen, D., Pavlou, P., & Rose, G. (2002). Encouraging citizen adoption of e-government by building trust. *Electronic Markets, 12*, 157–162.
Woodall, T. (2003). Conceptualizing 'Value for the Customer': An attributional, structural and dispositional analysis. *Academy of Marketing Science Review, 12*, 1–41.
Yang, H., & Yoo, Y. (2004). It's all about attitude: Revisiting the technology acceptance model. *Decision Support Systems, 38*(1), 19–31.
Zhao, F. (2013). An empirical study of cultural dimensions and e-government development: Implications of the findings and strategies. *Behaviour & Information Technology, 32*(3), 294–306.
Zhao, J., & de Pablos, P. O. (2011). Regional knowledge management: The perspective of management theory. *Behaviour & Information Technology, 30*(1), 39–49.

Dr. Omar Al-Hujran is an associate professor in the Department of Management Information Systems and Technology at Princess Sumaya University for Technology (PSUT). He got his bachelor's degree in computer science from Mu'tah University, Jordan, Master of Science in computing from University of Technology/Sydney, and PhD degree in Information Systems from Wollongong University, Australia. His work has been presented in several international Journals conferences such as *Information Technology for development Journal*, *Electronic Journal of E-Government, European Conference on e-Government, International Conference on e-Learning, e-Business, Enterprise Information Systems, and e-Government,* ACS/IEEE International Conference on Computer Systems and Applications, *and European Conference on Mobile Government.* His research interests include e-government and e-government adoption in developing countries.

Dr. Mutaz M. Al-Debei is an Associate Professor of Information Systems and Computing at the University of Jordan (UJ). He also served as an ICT chief consultant at The National Center for Security and Crises Management in Jordan from 2010 till 2015. Al-Debei earned his PhD from Brunel University London in Information Systems and Computing. His research has been published in learned Journals and conferences such as *European Journal of Information Systems*, *Decision Support Systems*, *Computers in Human Behavior*, *Internet Research*, *Government Information Quarterly, Telematics and Informatics, IEEE Technology and Society,* and *Business Process Management Journal*. Al-Debei's research interests include business models, mobile data services design, e-government, and social networking sites. Furthermore, Al-Debei has received many research awards such as best paper awards from UKAIS (2008) and IFIP 8.2 (2010), the prestigious Vice Chancellor's Prize for Doctoral Research from Brunel University in 2010, and the Distinguished Researcher Award from The University of Jordan in 2012. Al-Debei is also a Certified Information Systems Auditor (CISA) and a Certified Information Security Manager (CISM).

Dr. Akemi Takeoka Chatfield is Head of E-government & E-Governance Research Group, and a senior lecturer in IT at University of Wollongong. She was funded in 2010 by Kyoto University Disaster Prevention Research Institute, as visiting Professor in Disaster Governance under the Extreme Weather Conditions Research Program. Dr. Chatfield has received a funding by the 2010 World Summit on E-Governance to be held in November 2010 in Taiwan as an expert speaker. She was funded in 2009 by University of Wollongong to collaborate with the New South Wales State Emergency Service (SES) and NEC Australia and design a RFID-enabled enterprise system for improved visibility in emergency asset management and governance. Her research interests include IT benefits realization, e-government impact, and RFID/ad hoc sensor network/GIS-enabled government-community disaster management and coordination. She published in the top information

systems journals, including *Journal of Management Information Systems* (ERA A∗), *European Journal of Information Systems* (ERA A∗), *Journal of Information Systems Frontier* (ERA A), *Communications of the ACM* (ERA A), *Information Technology for Development Journal*, and *Electronic Journal of E-Government*. Dr. Chatfield co-chaired the Mini-Track on RFID simulation modelling at the 2009 AMCIS in San Francisco. She also co-edited in 2009 and 2010 two special issues on RFID in *Business Process Management Journal* and *Pacific Asian Journal of Information Systems*. She will co-chair the E-Government Mini-Track on Emerging E-Government Topics at the 2011 HICSS (globally ranked as the best international conference on information systems).

Dr. Mahmoud Migdadi is an associate professor in the Department of Management Information Systems and Technology at Princess Sumaya University for Technology (PSUT). He got his bachelor's degree in computer science from Yarmouk University, Jordan, MBA from Johnson & Wales University, USA, and PhD degree in Information Systems from Wollongong University, Australia.