

Sociotechnical Factors in the Endorsement of Governmental E-Transactions

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ABSTRACT

The success of governmental e-transactions in developing countries is due to the effective utilization of information communication technology. The current literature reports that e-transactions can meet with citizen reluctance. Due to its nature as a sociotechnical system, this article investigates the role of sociotechnical factors in the endorsement of e-transactions. Quantitative research was conducted to analyze online data from 663 participants from a population of 80,000 online users. Structural equation modelling was also performed to examine the association between sociotechnical factors and the acceptance of e-transactions. The results suggest that sociotechnical factors influence the usage of e-transactions. Thus, a theoretical sociotechnical model was developed which includes three levels: technical, organizational and social. A number of design and implementation activities, related to the three theorized levels, were suggested to guide governments in increasing the acceptance of e-transactions.

KEYWORDS

E-Government, E-Transactions, Government, Online, Sociotechnical

INTRODUCTION

The rapid advancements in information and communication technology affect various professions and also people's personal lives. The integration of technology has also dramatically affected how citizens communicate with government; one effect has been the evolution of e-government transactions or e-transactions (Siau & Long, 2009). In simple terms, e-government is the use of online communication mediums to provide routine services to citizens (Cordella, Hesse, & Irani, 2015). Within the public sector, e-transactions represented fundamental changes in the structures, values, and ways of performing the delivery of governmental services. In the context of governmental services, e-transactions are contact points where citizens can deal with the government directly. These dealings could include as examples: issuing construction permits, extracting national IDs and applying for passports. The significant implementation of e-transactions in many countries is due to the effective utilization of ICT.

The utilization of ICT for delivering governmental services through e-transactions can provide a number of benefits. For example, e-transactions can increase governmental agencies' accessibility and provide diverse channels of communication at a lower cost (Gilbert, Balestrini, & Littleboy, 2004;

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Venkatesh, Thong, Chan, & Hu, 2016). Many recent studies reported people's reluctance to embrace e-transactions as a means of receiving governmental services (Alsaeed, Adams, & Boakes, 2014). Hence, the information systems literature was trying to address this issue by, for example, looking at the technological perspective of e-transactions. This technological view relates the acceptance of e-transactions to its technological characteristics such as its ease of use and usefulness (Al-Gahtani, 2011). However, e-government transactions can be considered as a sociotechnical system that has a wide interaction with citizens whose context could affect their usage of this system (Damodaran, Nicholls, Henney, Land, & Farbey, 2005; Khan, Moon, Park, Swar, & Rho, 2011).

A sociotechnical perspective views information systems as a structure of technical, organizational and social elements. The success of information systems, according to this perspective, can be only achieved if these three elements are considered concurrently (Damodaran et al., 2005; Trist & Bamforth, 1951). E-transactions inherit such a structure as society interacts with government organizations and technologies to achieve outcomes which cannot be attained by one of these elements independently. Therefore, it is necessary to identify sociotechnical factors which play a major role in the acceptance of governmental e-transactions. The role of sociotechnical factors indicating the usage of computers (Ali & Alshawi, 2004) and the Internet (Gong, Li, & Stump, 2007) has been studied extensively; however, the literature contained few studies that focus on the impact of sociotechnical aspects of e-government acceptance (Khan et al., 2011; Meijer & Bekkers, 2015). Most studies on e-government focused on the technological perspective such as (Abanumy, Al-Badi, & Mayhew, 2005; Harrison & Zappen, 2015; Krishnaraju, Mathew, & Sugumaran, 2016). Also, current studies embracing the sociotechnical perspective in the e-government literature were exploratory in nature by only reviewing the literature (Khan et al., 2011) or by applying a qualitative methodology (Hedström, Karlsson, & Söderström, 2016). Therefore, this research adopted a holistic and empirical approach to explain the acceptance of e-transactions with a focus on sociotechnical factors. We attempt to answer the following research questions:

- What are the technical and organizational factors affecting the acceptance of e-transactions?
- What is the effect of utilizing e-transactions as a means of communication?
- What impact do social aspects have on the acceptance of e-transactions?

The first question has been addressed by examining the technical characteristics of e-transactions (comparative benefit, compatibility, difficulty and outcome certainty). Furthermore, exploring the hypothesized relationship between acceptance and organizational factors (reliance on government agencies and the reliance on the Internet) assisted in investigating the first question. The second question has been answered by testing the relationship between technological communicability and acceptance. The third question was investigated through examining the relationship between social factors (openness to change and conservatism) and the acceptance of e-transactions.

LITERATURE REVIEW

E-Government and E-Transactions

It is important to realize that the concept and practice of e-government has emerged from the potential use of electronic means, ranging from computers to the Internet, to satisfy citizens' needs (Siau & Long, 2005). A factor imperative to e-government is the e-transaction, on which attention has been mainly focused in this study. E-transactions facilitate services offered by government to its citizens; thus, assessing online electronic government transactions is the essence of this study (Abunadi & Alqahtani, 2017; Al-Gahtani, 2011; Scott, 2006). E-government ranges from the simple provision of information to the full integrated implementation of services (a form that is called e-transaction) and the newer forms of e-government (the virtual governments, open

government) (Agostino, Arena, Catalano, & Erbacci, 2017; Fang, 2002). An emerging approach to e-transactions is to view them as a sociotechnical system. The more elaborate definition of e-transactions is that of the sociotechnical approach, which views technology as a means to improve the social settings of the adopters of this technology. E-transactions are not mere technological online tools that facilitate operations between government agencies and citizens, but rather connectors and communication methods (Damodaran et al., 2005).

There are a number of benefits of e-transactions in facilitating communication between government agencies and citizens. E-transactions progress operations and tasks that are required to complete the provision of citizens' services. The benefits of e-transactions also include increased accessibility and diverse channels of communication with citizens provided at lower cost (Gilbert et al., 2004; Venkatesh et al., 2016). Additionally, the benefits of e-transactions could vary from minimization of fraud, automation of procedures, improved prioritization of resources, increased transparency, better equity, and enhanced traceability of transactions (Carter, Weerakkody, Phillips, & Dwivedi, 2016; Pedersen, 2017). Despite the noted benefits, the implementation of e-transactions faces several challenges. Several studies, such as those of Al Nagi and Hamdan (2009) and Kumar, Sachan, & Mukherjee (2017), highlight a number of critical challenges that are particularly evident in developing countries. First are a lack of computer literacy and Internet accessibility. Second, rural areas have higher levels of digital divide where there are inadequate levels of technological infrastructures. Third, there is a weak awareness regarding the electronic services provided. The fourth critical challenge facing the implementation of e-transactions is an absence of legislation that embraces electronic means as an official means of conducting business.

Issues and problems associated with e-transactions can reduce the reliance on the governmental services provider and the technology by which these services are delivered. Loss of data, unreliability of electronic services, lack of security and privacy, and, most importantly, the difficulty of technology usage have a negative impact on the adoption of e-transactions (Pedersen, 2017). Therefore, the aim of this study is to examine individuals' (citizens') acceptance in using e-transactions. Following this introductory discussion, a review of technology adoption and acceptance theories/models is presented, as well as e-government-related studies.

Technology Adoption Theories

The information systems (IS) field has continuously studied the technological and social phenomenon of technology adoption (Dwivedi et al., 2017). There are many theories that have arisen to encapsulate the phenomenon of technology adoption. Initially, most IS adoption theories relied on the Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TPB). The Technology Acceptance Model (TAM) developed from TRA (Davis, 1986). These socio-psychological theories focused on human behavior with the intention to perform an action before accepting this action. Pre-existing beliefs and attitudes affect the individual's decision to accept their behavior in relation to an object or technology (Ajzen, 1991; Davis, 1986; Fishbein & Ajzen, 1975). From TAM advanced the Unified Theory of Acceptance and Use of Technology (UTAUT), which condenses previous efforts in the TAM stream into a unified theory (Venkatesh, Morris, Davis, & Davis, 2003).

Another stream in Information Systems technology adoption is the Diffusion of Innovation (DOI). DOI discusses the rate of innovation spreading within a society and its relation to communication channels within the society, time, and the social system. DOI was applied initially to agriculture, where businesses introduced new technologies and tools to enhance production. The diffusion rate is affected by the following variables: relative advantage, complexity, compatibility, trialability, and observability. The theory proposes that, in order for an innovation/technology to sustain usage within a society, it requires continuing wide acceptance/adoption (Rogers, 2003).

Another robust technology adoption model is the Perceived Characteristics of Innovation (PCI). The PCI model was tailored from DOI for studying technology specifically rather than innovation. PCI was developed by Gary Moore and Izak Benbasat in 1991. This theory was contextualized from

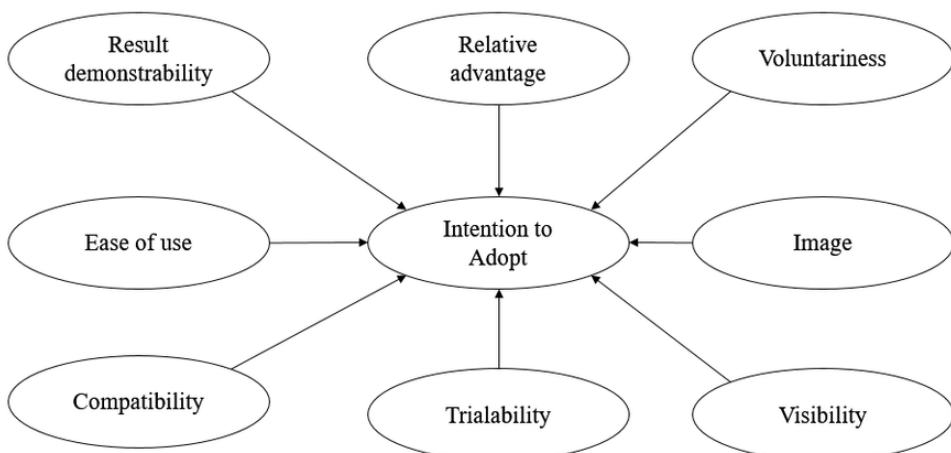
DOI variables and improved the instrument by using rigorous measures, resulting in 38 items with eight variables (Moore & Benbasat, 1991). For the reasons mentioned PCI was adopted as a core theoretical pillar of this study. PCI includes the following variables: voluntariness, relative advantage, compatibility, image, ease of use, result demonstrability, visibility and trialability. The PCI instrument (Figure 1) was contextualized as a theory that focuses on the adoption of technologies (Moore & Benbasat, 1991). Voluntariness is defined as the measure by which technology usage is considered as being voluntary. The relative advantage is defined as the measure by which the technology is considered to be superior to its predecessor. Compatibility is the measure by which a technology is considered to be consistent with values, requirements, and the previous experiences of the user. The variable image is defined as the measure by which technology usage would provide social approval and status. Ease of use or complexity is the measure by which technology is considered difficult or easy to use. Result demonstrability is defined as the measure by which the results of using a technology are noticeable by others. Visibility is the level at which using technology itself is visible to others. Trialability is the degree to which a technology is available for trial before its actual usage and full adoption (Moore & Benbasat, 1991; Rogers, 2003).

A common challenge of technology acceptance models such as TAM and PCI is the lack of social and organizational perspective in explaining user behavior while using technology (Alqahtani, Watson, & Partridge, 2014). Incorporating PCI with other non-technology-oriented theories to explain user behavior is imperative in expanding information system research. Therefore, in the current study, a social perspective is considered to extend the technology adoption theories. The following section explains a theory that is related to the social perspective.

Social Perspective

Different societies have varied priorities which are related to their social structure, history, individuals' experiences and geographical location (Bardi & Guerra, 2010; Schwartz & Bardi, 2001). Social perspective has been used in different settings to explain individuals' behavior and decisions such as field of study selection, consumer procurement choices and used method for government services. In the information systems field, studies which focused on the social perspective examine the relation between social factors and technology acceptance. Social perspective can be measured on national and individual levels. An important theoretical model that can explain individuals' social perspective is the Schwartz theory of Basic Personal Values (BPV).

Figure 1. Perceived Characteristics of Innovation (PCI) variables



Basic Personal Value is a socio-psychological theoretical lens developed by Schwartz and Bilsky (1987) which focused on individual social values as a motivator of human behavior. A basic personal values (BPV) theory that identified and categorized values of varying societies (Schwartz & Bilsky, 1990). Values are universal and tend to impact human behavior (Schwartz, 2003). There are four high order values: openness to change, conservatism, self-transcendence and self-enhancement. Openness to change is the inclination of an individual to be autonomous in opinion and thought and stimulated towards trying new things. On the other hand, conservatism is about respecting social norms and refraining from changing norms. Additionally, the value of conservatism incorporates avoiding change in order to keep social stability. The third value, self-transcendence, is about sustaining the welfare of others while being tolerant to different social classes. The final value, self-enhancement, is about gaining authority and social power as well as seeking self-accomplishments. The theoretical foundation of the BPV comes from the three common requirements of persons: “needs of individuals as biological organisms, requisites of coordinated social interaction, and survival and welfare needs of groups” (Davidov, Schmidt, & Schwartz, 2008, p. 423).

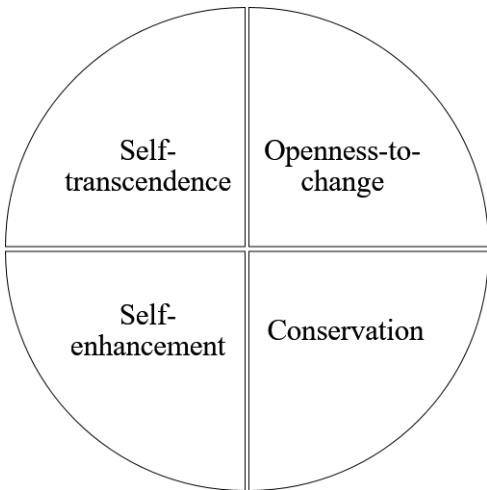
BPV model presented in Figure 2 is theoretically well-grounded and has been empirically validated many times by Schwartz and other researchers (Schwartz, Caprara, & Vecchione, 2010). BPV enables the investigation of the social perspective at an individual level. Thus, this model was adapted in this study.

BPV high order values were reviewed to examine their relevance to the context of this study: e-transactions. Two values were found relevant to the context of this study: openness to change and conservatism. E-transactions as part of e-government are considered as a new technology particularly in emerging economies. The openness to change value can be considered as a motivator of the acceptance of new technology (e-transactions). On the other hand, conservatism can be an inhibitor to the acceptance of e-transactions because some individuals might be worried about privacy and security breaches that might occur.

Sociotechnical Perspective on E-Transaction Endorsement

Although the previously discussed theories address the need to analyze adoption of technologies, e-government research has taken a different stream. Since its early inception, e-government research has sought to fill the gap in technology adoption/acceptance theories by creating an amalgamation of theories in an effort to cover the complex phenomena of e-government adoption. This research has

Figure 2. Basic personal values



chosen this stream in information systems technology adoption research, as e-transaction systems are in fact technical and social systems that affect all levels of society.

The sociotechnical and complex nature of e-government adoption has pushed researchers of e-government to create different models which come from various technology adoption/acceptance theories. For example, one of the well-known models in e-government research is the e-government adoption model (Carter & Bélanger, 2005). This model was based on several technology adoption theories. Carter and Bélanger (2005) adopted DOI, Trustworthiness, and TAM to match the needs of e-government adoption. This model includes compatibility, relative advantage, image, complexity from DOI, ease of use and perceived usefulness from TAM, and trust of Internet and government from a model of trustworthiness (Carter & Bélanger, 2005; McKnight, Choudhury, & Kacmar, 2002). To add contextualization, this current study has followed this e-government adoption research approach of combining multiple theories/models to be able to explain this phenomenon. Additionally, the sociotechnical theory was adopted to add an extra layer of depth into the elucidation of e-government adoption (Damodaran et al., 2005). Sociotechnical theory originally was founded within the Tavistock Institute of London. This theory explains technological systems in terms of three elements: organizational, technical, and social. Sociotechnical theory is well regarded in the information systems field. The theory states that the success of systems requires consideration of these three elements. The following section discusses the related studies that undertake a sociotechnical approach to explain the adoption of e-transactions within an e-government context (Damodaran et al., 2005; Trist & Bamforth, 1951).

The sociotechnical theory into e-transaction endorsement has provided a lens for the review of the current e-government adoption literature. This review aims to identify related studies that are congruent with the three elements of sociotechnical theory: organization, technology, and society. A thorough review was conducted to find the studies that have discussed the adoption of e-government in terms of the elements of sociotechnical theory.

In Table 1, a review of related studies was conducted with dissection of each study in regard to its theoretical and methodological approach. In addition, the outcomes and relevance of these studies to the current research were outlined. It was found that 11 studies were most relevant to this research; out of these studies only nine were empirical. All of the studies considered the technological elements of e-government, yet only 10 considered the social element of the e-government system. Only two studies had taken into consideration the organizational element of e-government. Both of these papers were theoretical (Alarabiat et al., 2017; Khan et al., 2011).

Most of the studies focused on the technical and social elements of e-government systems. In these studies, there was more attention paid to technology, and the social perspective was weaker. For example, Shareef et al. (2011) presented technological factors such as service response, functional benefits, and information quality, and social factors such as trust, image, and perceived uncertainty. Most of the related studies used the most popular technology adoption theories, such as TAM and UTAUT, in combination with other models such as social cognitive theory (Carter et al., 2011). This current study extended the literature of e-government adoption by utilizing the sociotechnical perspective and combining it with Moore and Benbasat's PCI and Schwartz et al.'s BPV models, as the following section will illustrate (Moore & Benbasat, 1991; Schwartz et al., 2010).

THEORETICAL FOUNDATION

Overview

The present research model is a combination of Moore and Benbasat's PCI and Schwartz's BPV (Moore & Benbasat, 1991). This combination has been used to integrate several models to gain a deeper understanding of the sociotechnical factors associated with the usage of e-transactions. Therefore, the present model can be used to effectively explain the influences of sociotechnical

Table 1. Related studies

Research		Summary			Evaluation	
Study	Year	Method	Theory	Findings	Strength	Relevance to the Current Study
A sociotechnical perspective on e-government issues in developing countries: a scientometrics approach (Khan et al., 2011)	2010	Systematic Literature Review	Sociotechnical Theory	E-government literature is moving towards empirical studies rather than only theoretical foundations, and there is a lack of depth in research methodology.	This study has applied a rigorous systematic literature review and provided an overview and direction for e-government research.	The study is not empirical and has not provided factors that would impact the endorsement of e-government.
The role of security and trust in the adoption of online tax filing (Carter, Shaupp, Hobbs, & Campbell, 2011)	2011	Survey of 304 citizens	UTAUT (partial) Social Cognitive Theory (partial)	Three variables have significant impact on usage intention of online tax filing: performance expectancy, effort expectancy, and social influence.	The study has combined well known theories them into a framework to predict the endorsement of online tax filing.	The study only focused on a very specific e-government technology which is online tax filing. Organizational factors are lacking.
Challenges of introducing a professional eID card within health care (Hedström et al., 2016)	2016	Interviews	Sociotechnical Theory	Three main challenges were identified for using eID in a particular e-government system, which are: privacy, usability, and user behavior.	The study has focused on different professional healthcare communities and contextualized the methodology according to the technology used.	Factors that were derived were not tested on a large sample size using statistical techniques.
e-Government Adoption Model (GAM): Differing service maturity levels (Shareef, Kumar, Kumar, & Dwivedi, 2011)	2011	Survey of 241	TAM, DOI, TPB, IS System success model	Individually, TAM, DOI and TPB are not able to explain the endorsement of e-government technologies.	Rich theoretical perspective and sound methodology	This study is directly related to the current research. However, the used sample size is small and the organizational perspective is lacking.
An empirical validation of a unified model of electronic government Adoption (UMEGA) (Dwivedi et al., 2017)	2017	Survey of 377	The model is considered as an extension of UTAUT by adding the perceived risk.	This model performs well empirically regarding its explanation of e-government adoption and SEM fit indices.	A thorough review of information technology adoption theories including: TRA, TAM, TPB, Decomposed Theory of Planned Behavior, Social cognitive theory, Innovation Diffusion Theory, TAM2, DOI, UTAUT	Missing cultural, Trust perspectives and stronger view on social aspects.
Consumers' Awareness of the Value of e-Government in Zambia: Empirical Evidence (Bwalya Kelvin & Tanya du, 2015)	2015	Survey of 409	Identified fragmented factors that rely on different models, including TAM and TPB.	Found that perceived usefulness, perceived ease of use, and self-efficacy are significant factors in the adoption of e-government.	Considering the factor of continuance usage of e-government.	Not clear contextualization process for the theoretical framework. Neglecting major dimensions on social factors in this study. Cultural factors are lacking.

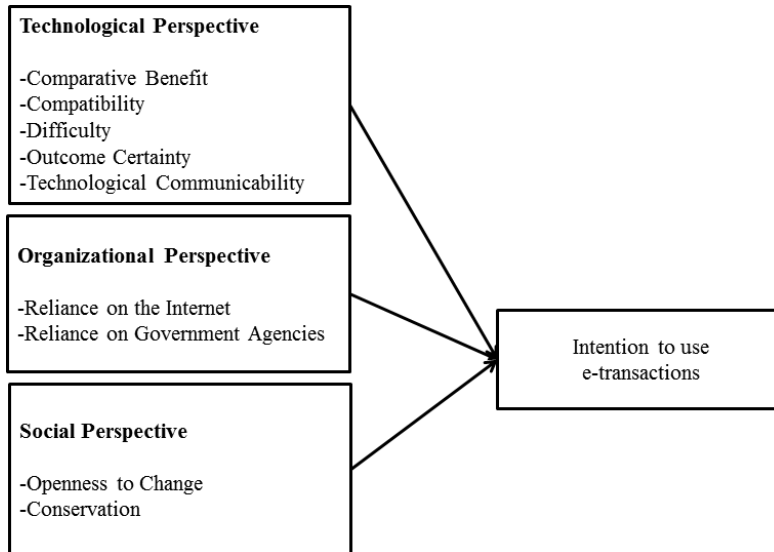
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Table 1. Continued

Research		Summary			Evaluation	
Study	Year	Method	Theory	Findings	Strength	Relevance to the Current Study
E-government Adoption in Developing Countries Need of Customer-centric Approach: A Case of Pakistan (Asmi, Zhou, & Lu, 2016)	2017	Survey sample of 153	Extension to TAM by including social influence	Ease of use and usefulness are significant factors in the adoption of e-government. Additionally, social influence has impact on usefulness. On the other hand, trust has influence on usefulness only.	Identified trust and social influence as antecedents to usefulness and ease of use of e-government.	No elaboration on the organizational factors that affect adoption. Trust and social influence were not considered as antecedents to the endorsement of e-government, making them only secondary factors.
Towards an Understanding of the Factors Influencing the Acceptance and Diffusion of e-Government Services (Mahadeo, 2009)	2009	Mail survey of 115 targeted employees in the private sector.	Extended TAM, including factors such as social influence, trust, voluntariness and facilitating conditions.	Trust, social influence, compatibility, and voluntariness were found significant to the adoption of e-government.	Provided technological, organizational, and social analysis to e-government adoption.	Focused only on a small sample of employees. This sample does not include a sample of the public who are the real users of e-government.
The imperative of influencing citizen attitude toward e-government adoption and use (Al-Hujran, Al-Debei, Chatfield, & Migdadi, 2015)	2015	Survey of 413 citizens	Extended TAM by including trust, national culture, attitude toward e-government, and public value.	Perceived public value and attitude were found significant influencers of e-government adoption. Trust had a significant impact on perceived public value and ease of use.	Comprehensive model for studying social and technical perspective of e-government. Yet, organizational aspects are lacking.	Only two dimensions of national culture (uncertainty avoidance and power distance) were found significant influencers on ease of use and perceived public value of e-government.
Predicting Citizens' Acceptance of Government-led e-Participation Initiatives through Social Media; A Theoretical Model (Alarabiat, Sá Soares, & Estevez, 2017)	2017	Literature review	Extension of TPB by including the following factors: characteristics of social media, trust, facilitating conditions, perceived value, and participation efficacy.	E-participation model that is only theoretically founded.	Developed the model based on TPB.	Although this paper covers the technical, social, and organizational aspects of e-government, its contribution is only a theoretical model that has not been empirically validated.
Factors influencing the adoption of e-government services (AlAwadhi & Morris, 2009)	2012	Mixed method of surveying 880 students, focus group and usability testing.	Amended version of UTAUT, which incorporated the following factors: academic course, gender, and Internet experience.	All UTAUT variables were found significant influencers on e-government adoption.	This study employed a well-known theoretical model and robust methodological procedure using a mixed method approach.	Sample with only specific group of citizens (students) in a specific context (education). There is also no focus on organizational aspects.

factors on technology acceptance in the Kingdom of Saudi Arabia. The study has balanced, selected, and assessed factors relevant to the research (Whetten, 2002). Figure 3 illustrated the research model based on BPV and PCI and depicted the factors influencing the intention to use e-transactions and the acceptance level. The following sections discuss the factors playing an integral role in the wide acceptance of e-transactions in the Kingdom of Saudi Arabia within the scope of the sociotechnical theoretical perspective.

Figure 3. Research model



Technological Perspective on E-Government

Technological characteristics of e-transactions have been used to enrich the explanation of its acceptance as e-transactions are mainly a technological innovation. PCI theory has been integrated with the current model to assess users' acceptance of IT or IS in its initial phase of implementation, that is, when the use of these systems is still optional (Al-Ghatani, 2003). Following are the variables included in the research and their definitions.

Comparative Benefit

In this study, comparative benefits refer to those from e-transactions over and above the typical approaches of delivering governmental services. Technological benefits are important factors related to the acceptance of e-transactions (Alghamdi & Beloff, 2014). According to PCI theory, to depict the comparative benefits, citizens who consider e-transactions as beneficial must be compared with those who prefer traditional methods. These benefits of e-transactions are in comparison to all different methods provided by the government agencies. Examples of these benefits are the improved speed of completion and ease in comparison to other methods (Moore & Benbasat, 1991). While the existing literature supports the saliency of this hypothesis in determining intention of usage, the present study adopts the following hypothesis for associated benefits (Moore & Benbasat, 1991; Rana, Dwivedi, Williams, & Weerakkody, 2015).

H1: Comparative benefits have a positive relationship with the intention to use e-transactions.

Compatibility

The technological implications associated with the wide utilization of e-transactions call for extensive research (Baker, Al-Gahtani, & Hubona, 2010). The compatibility of e-transactions is an important aspect of acceptance, especially if it satisfies citizens' technological needs as explained by PCI theory. Users measure e-transactions' compatibility to different aspects such as preferences and previous experiences (Moore & Benbasat, 1991). Positively influenced associations between acceptance and compatibility indicate that people consider e-transactions compatible with their norms and

technological requirements (Krishnaraju et al., 2016; Liu, Furrer, & Sudharshan, 2001; Müller & Skau, 2015). Accordingly, the following hypothesis is formulated to examine the association between compatibility and intent to use e-transactions.

H2: Compatibility positively impacts intention to use e-transactions.

Difficulty

Difficulty in using advanced technology contributes to people's resistance (Al-Ghatani, 2003; Rogers, 2003). Users of e-government in developing countries found difficulties in its usage. These difficulties arise because many of these systems are still at an immature level (Choi, Park, Rho, & Zo, 2016). Due to this reason Moore and Benbasat's (1991) positively formulated variable "ease of use" was not used. System difficulty is a variable that was developed in this study with a negative meaning of "ease of use". The perception regarding difficulties in using e-transactions directly impacts the intention to use technology (Al-Gahtani, 2011; Alateyah, Crowder, & Wills, 2014). E-transactions will be difficult to implement if people are unwilling to use recently introduced technologies.

H3: The higher the system difficult level, the lower the intention to use e-transactions.

Outcome Certainty

PCI concludes that when people are unaware or uncertain of the outcome of using new technology, adaptation becomes difficult (Moore & Benbasat, 1991). Saudi Arabia is a largely collective society and tends to promptly share technological experiences with each other (Liu et al., 2001). Thus, it is important to analyze the level of benefits that needs to be associated with e-transactions such that it can be shared and communicable. Communicable benefits lead to greater influences on actual intention (Hussein, Mohamed, Ahlan, & Mahmud, 2011). Outcome certainty is a prominent factor since citizens play a key role in communicating (e.g. using social media) the results for the use of e-transactions (Sabi, Uzoka, Langmia, & Njeh, 2016; Shiau & Chau, 2016) and positive word of mouth can increase the adoption of e-transactions in Saudi Arabia.

H4: Outcome certainty is positively related to the intention to use e-transactions.

Technological Communicability

Technological communicability is the extent to which e-transactions are capable of being a communication mediator between service providers and end-users. Technological development is considered as an important factor in human communication and networks (Hakken, 1991). According to a study, technological communicability is meant to assess the capacity of technology in making communication effective (Aoun, Vatanasakdakul, & Li, 2010). This research examined the manner in which e-transactions facilitate citizens' communication with the government. It would be reasonable to say that e-transactions reflect the significance of communication between the government and citizens (Harfouche, 2010). Despite the growing use of e-transactions, there is a lack of research into the importance of e-transactions in communication by the government. Therefore, an important aim of this study was to determine how enhanced communication can facilitate the usage of e-transactions. Citizens who are convinced of the use of e-transactions as a means to communicate with the government can be considered a contributing factor to the wide acceptance of e-transactions.

H5: Technological communicability positively impacts the intention to use e-transactions.

Organizational Perspective on E-Government

This perspective encompasses factors related to organizations whether they are governmental agencies or private intent companies. Saudi Arabian citizens have been doubtful of the safety of the Internet and online government transactions (Al-Solbi & Mayhew, 2005). Thus, the perceptions associated with the Internet and government agencies can impact the level of citizens' agreement regarding government services. Related factors include reliance on the safety of using the Internet. Also, these factors include reliance on the efficiency and effectiveness of government agencies as providers of e-transaction services.

Reliance on the Internet

Saudi Arabian citizens remain skeptical about the safety of the Internet as a medium that connects them to governmental organizations, which is fundamental for the usage of e-transactions. Saudi citizens do not rely much on the Internet as they are required to share their private data with different organizations and governmental agencies when making e-transactions and are rightly alarmed about the different types of risks associated with the Internet. The lack of sufficient legal and technological safety measure by governmental organizations also plays a role in the use of the Internet to connect citizens using e-transactions. Thus, concerns can arise about how robust and safe the Internet as a connection media to governmental organizations is as a channel for e-transactions (Carter et al., 2016; Sharma, 2015).

H6: Reliance on the Internet positively impacts the intention to use e-transactions.

Reliance on Government Agencies

Globally, there are several reasons people are doubtful about the authenticity of data presented on e-transaction sites. Related websites often show incorrect or outdated information which tends to increase the level of doubt among citizens about these organizations. Poor websites often give an impression for the visitor of organizational ineffectiveness (Pavlou, 2003). E-transactions are dependent on how much people rely on government departments. For instance, government employees may lose data and, as a result, incorrectly process transactions. This lack of reliance can negatively impact the usage of e-transactions. An integral association was found between citizens' reliance and the usage of e-transactions (Wirtz, Piehler, & Daiser, 2015).

H7: Reliance on government agencies is directly associated with the intention to use e-transactions.

Social Perspective on E-Government

The acceptance of a new technology or perspectives is largely impacted by local values. This is mainly because social/cultural values are relevant to influencing and predicting human behavior (Schwartz, 1994; Schwartz & Boehnke, 2004) and are a universal factor (Schwartz, 1992, 2003; Schwartz & Bilsky, 1990). Existing literature on adaptation to the Internet, found that culture has a significant influence on the endorsement of new technologies (Dwivedi & Weerakkody, 2007). Thus, society's characteristics can also be a critical factor impacting the use of e-transactions in Saudi Arabia (Doane, Kelley, & Pearson, 2016; Webber, Leganza, & Baer, 2006). This study identified two groups of social values related to the acceptance of e-transaction, defined as follows.

Openness to Change

Society needs adopting useful change to be able to grow (Bagchi & Kirs, 2009). Openness to change refers to inspiring and encouraging mores related to seeking innovation, creativity, autonomy, and liberation from the influence of society. Individual users of information systems such as e-transaction

vary in their willingness to use these technologies. These differences among users are apparent according to their personal innovativeness and desire to change (Agarwal & Prasad, 1998). It was found that personal interest and independence in intellect leads to adoption of new technologies (Gupta & Arora, 2017; Wu, Cai, & Liu, 2009). The concept of e-transactions shows rapid changes evident in the Kingdom of Saudi Arabia. Therefore, users must have higher levels of openness to change to benefit from e-transactions. The implementation of e-transactions, as a means to contact the government, would reassure citizens of their freedom (Bagchi, Udo, Kirs, & Choden, 2015).

H8: Openness to change has an integral impact on the intention to use e-transactions.

Conservatism

Conservatism refers to the mores that encourages reluctance to perform an action in order to conform to tradition, and maintain personal security and privacy. Within Saudi, it is important to abide by the rules of society while ensuring tradition. Usage of new technologies such as e-transactions can be outside the tradition or norm (Bagchi & Kirs, 2009; Ha & Stoel, 2009). Thus, it is assumed that traditional values are related to e-transactions (Bannister & Connolly, 2014). Yet, embracing new technologies can be considered as a motivation of an individual who is less concerned about traditions or social norms (Lewis, Snyder, & Rainer, 1995; Rogers, 2003; Schwartz & Boehnke, 2004). Furthermore, seeking safety leads to avoiding internet technologies that can have security or privacy concerns. These concerns can include disclosing personal or family information and worry about the lack of security policy for electronic transactions conducted over the internet. Hence, security and privacy can become a major concern for a conservative society (Sararrayih & Sriram, 2015; Tolley & Mundy, 2009).

H9: Conservatism influences the intention to use e-transactions.

RESEARCH METHODOLOGY AND DESIGN

This study aimed to assess citizens' behaviors toward the usage of e-transactions. To do so, online surveys were carried out to obtain relevant information related to the investigation (Leidner & Kayworth, 2006). The national traditions of Saudi Arabia were assessed along with their impact on the usage of e-transactions.

Once the literature review was complete and the research model created, the concepts and questions were examined to identify a suitable instrument. The next stage was translating the questionnaire into Arabic. The questionnaire was translated from English to Arabic by a professional for the understanding of participants. Ten bilingual participants were asked to review and pre-test the accuracy of the questionnaire, after which scales were developed. The rationale behind the selection of 10 participants was to check the validity and reliability of items. Effectiveness of the online survey software at this stage had been also tested. Afterwards, the validity of the content according to the elements and variables has been assessed (Lewis et al., 1995). Furthermore, the resulting variable was pilot-tested with 113 participants to acquire feedback and recommendations for final changes. In the final stage, the online survey was sent to approximately 80,000 online users, after which we screened for outliers. The demographics of 663 participants are explained in Table 2 as the finalized data sample. From the sample of 80,000 online users, some of the users did not respond to the survey with commitment. Therefore, they were excluded. Also, a majority of the users filled out the online survey only partially which resulted in inadequate answers; including such incomplete responses could have caused biases in the research. Therefore, incomplete responses were also excluded. Only the most relevant and complete survey responses were included; the final response rate was 663 participants. Structural equation modeling (SEM) was used to test the suitability of the collected data and the hypotheses in this study.

Table 2. Participant characteristics

Data		Number of Contributors	Sample Percentage	Percentage in Study Population
Gender	Female	159	23.59%	24%
	Male	504	76.41%	76%
	Total	663	100%	100%
Age	Below 17 years	25	3.71%	4%
	18–22 years	102	15.13%	15%
	23–30 years	240	37.24%	36%
	31–40 years	176	26.11%	27%
	41–50 years	92	13.65%	14%
	51–60 years	22	3.71%	3%
	60 years and above	6	0.45%	1%
	Total	663	100%	100%
Education	Uneducated	1	0.15%	0%
	Primary or secondary school	32	4.75%	5%
	High school	162	24.04%	24%
	Technical or professional degree (no Bachelor's degree)	125	18.55%	19%
	Undergraduate	229	35.46%	35%
	Post-grad. certificate	41	6.23%	6%
	Higher degree (Master's)	57	8.46%	9%
	Higher degree (PhD)	16	2.37%	2%
	Total participants	663	100%	100%
Occupational Status	Unemployed	76	11.28%	11%
	Students	153	22.70%	23%
	Government sector	283	42.43%	43%
	Private sector	90	14.54%	14%
	Freelancer	44	6.53%	7%
	Other	17	2.52%	3%
	Total	663	100%	100%

Reliability of Variables

It is imperative to establish a high accuracy for the 50-item instrument (Cronbach's $\alpha = 0.91$). A Cronbach's α above 0.7 means acceptable reliability (Hair, Black, Babin, & Anderson, 2010). Table 3 presents the values of Cronbach's α and the alpha coefficients for all the variables. The internal consistency for all the variables was within the recommended range (Cronbach, 1990). Variables whose alpha value increased in comparison to the preliminary test were retained as-is for further analysis. To improve the reliability of outcome certainty, the fourth item (OC4) was excluded during the pilot study. Composite reliability (CR), Cronbach's α , and average variance explained (AVE) were used to verify reliability. CR and AVE are considered stricter conditions for reliability

Table 3. Reliability of variables

Hypothesis	Items	Reliability (Alpha)	Alpha Contrasted With Preliminary Test	CR	AVE
Comparative Benefit (CB)	5	0.92	+0.01	0.92	0.69
Compatibility (CT)	4	0.90	−0.01	0.92	0.74
Difficulty (DFT)	4	0.68	−0.06	0.67	0.37
Outcome Certainty (OC)	3	0.71	−0.08	0.75	0.60
Reliance on the Internet (RI)	3	0.89	+0.04	0.89	0.74
Reliance on Government Agencies (RG)	3	0.93	−0.02	0.93	0.77
Technological Communicability (TC)	3	0.72	−0.08	0.86	0.76
Intention to Use E-transactions (USE)	5	0.88	−0.02	0.89	0.62
Openness to Change (OP)	7	0.71	+0.01	0.96	0.90
Conservatism (CN)	13	0.79	+0.02	0.94	0.88

and a value greater than 0.7 and 0.5 is recommended (Fornell & Larcker, 1981). The variables were greater than the recommended levels for CR (0.96–0.75) and AVE (0.60–0.90), with the exception of difficulty. Given its unacceptable Cronbach’s alpha, CR, and AVE levels, the difficulty variable was excluded from further investigation as a part of pilot testing.

Evaluation of Common Method Bias

The validity of instruments is largely threatened by common method bias (CMB) (Boudreau, Ariyachandra, Gefen, & Straub, 2004; Straub, Boudreau, & Gefen, 2004). To avoid this issue, multiple remedies were applied: all items were adopted from previously validated studies, the survey reinsured the emotional and progressive parting between the exogenous and endogenous, and participants’ confidentiality and anonymity were assured (MacKenzie & Podsakoff, 2012; Podsakoff, 2003). To assess the presence of CBM, Harman’s single-factor test was conducted. CMB exists when a single factor can account for every variance in the variables (Gefen, Rigdon, & Straub, 2011). The results showed that the extracted aspect reflected only 26.81% of the inconsistency, which is less than the known cutoff of 50% (Hair et al., 2010; Schwartz et al., 2001; Zhu & Kraemer, 2005). Although Harman’s approach has been commonly applied in the literature, there are increasing disputes of its feasibility in detecting CBM (Al-Somali, Gholami, Clegg, & Bennett, 2015; Pavlou, Liang, & Xue, 2006). Thus, these results have been corroborated fusing another method, the common latent factor method, and comparing uniform reversion weights before and after the addition of a shared dormant aspect. No difference greater than 0.20 was found for all items, indicating that the sample does not contain CMB (Bagozzi, 2011).

Measurement Model Validation

The research model is evaluated to ensure the construction of variables capable of validating the measurement and structural model. The most important indices were CFI, RMSEA, IFI, AGFI, and SRMR. The listed indices were used to ensure that accurate approaches were adopted to examine the model (Hair et al., 2010). In general, it is usually assumed a CFI and IFI approaching 1 depict high validity. In contrast, an RMSEA and SRMR closer to zero were better (Hooper, Coughlan, & Mullen, 2008).

The measurement model was validated and shown with AMOS using maximum likelihood estimation to calculate the model’s parameters. The example depicted the following effective validity:

CFI = 0.97, RMSEA = 0.03, IFI = 0.96 and SRMR = 0.04. Most items had a significant p-value and a critical ratio higher than 1.96, demonstrating convergent validity. However, the following items did not apply to the previously mentioned conditions and thus were dropped from their corresponding variables: OC3, TC3, OP4, OP5, CN1, CN3, CN5 and C9. The associations between variables with a lower correlation than the cut-off (0.85) revealed the discriminatory strength of the measurement.

Further assessments have been carried out using average variance extracted (AVE), maximum shared variance (MSV), and average shared variance (ASV). An MSV lower than AVE and ASV lower than AVE indicates validity. Table 4 presents the results for AVE (>0.05), MSV, and ASV, where MSV < AVE and ASV < AVE indicate validity. The table also shows the square root of AVEs, which goes beyond the correlations of different variables. This is also important to depict discriminate validity (Hair et al., 2010). The path analysis and model assessment became feasible through the overall model analysis.

Structural Model Validation

The examination of a structural model is important to test various hypotheses (Hair et al., 2010; Pavlou et al., 2006). The structural model is shown in Figure 4 and the estimations for the hypothesized associations are shown in Table 5.

Table 4. Validity of measurement model

	AVE	MSV	ASV	OC	CB	CT	RI	RG	TC	USE	CN
OC	0.60	0.35	0.20	0.77*							
CB	0.69	0.66	0.29	0.56	0.83*						
CT	0.74	0.66	0.25	0.48	0.82	0.86*					
RI	0.74	0.30	0.14	0.36	0.44	0.36	0.86*				
RG	0.77	0.30	0.10	0.24	0.34	0.22	0.55	0.88*			
TC	0.76	0.61	0.29	0.49	0.66	0.58	0.41	0.38	0.87*		
USE	0.62	0.61	0.31	0.59	0.64	0.62	0.40	0.27	0.78	0.79*	
CN	0.88	0.39	0.17	0.38	0.33	0.33	0.18	0.23	0.48	0.52	0.94*
OP	0.90	0.39	0.13	0.34	0.30	0.31	0.18	0.14	0.37	0.44	0.62

* denotes the square root of the AVEs for each variable

Table 5. Structural parameter estimates for the structural model

Hypothesis	Effect Magnitude	Result
H1: USE←CB	0.09***	Supported
H2: USE←CT	0.10***	Supported
H3: USE←DFT	-	-
H4: USE←OC	0.14***	Supported
H5: USE←TC	0.32***	Supported
H6: USE←RI	0.08***	Supported
H7: USE←RG	-0.05*	Supported
H8: USE←OP	0.22***	Supported
H9: USE←CN	0.09***	Supported

*** p < 0.001, * p < 0.05

Figure 4. Structural Model

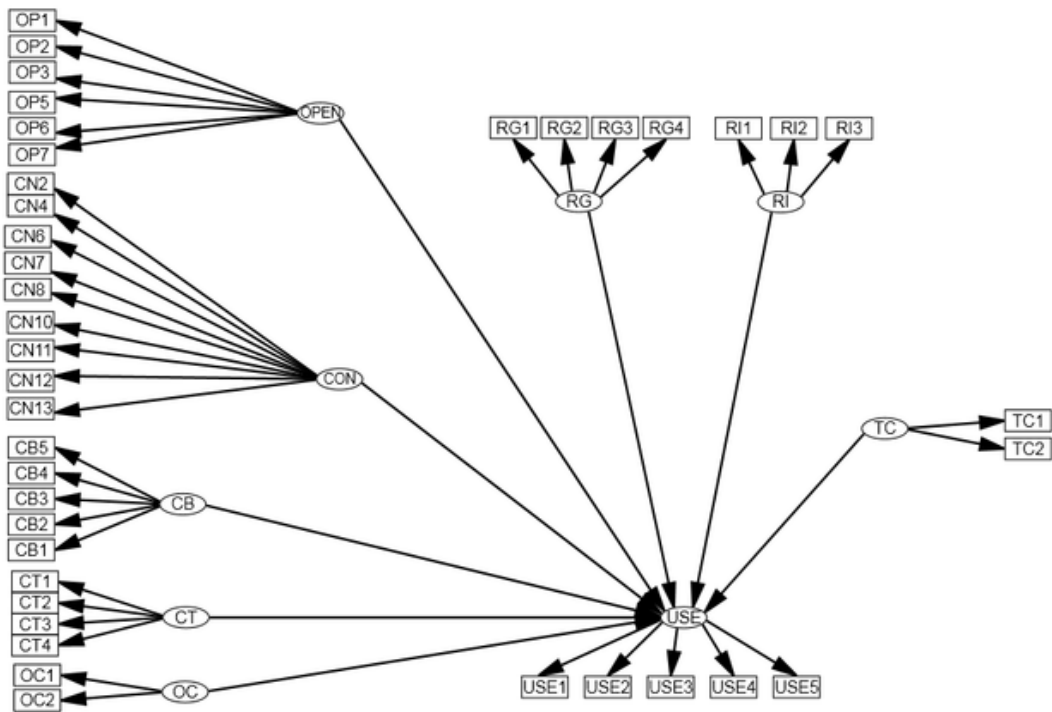


Table 5 presented the regression coefficient, which shows the magnitude of effect on an endogenous variable, and the direction (positive or negative) of the relation and finally whether the hypothesis is supported or not. The table shows that all hypothesis were supported and with positive relations with the exception of hypothesis 7.

The squared multiple correlations (SMC) are also an important method to evaluate the models. SMC or R^2 remain significant to depict the dominance of endogenous variables. SMC can be used to predict acceptance by calculating the percentage variance in the exogenous variables explaining the endogenous ones (Byrne, 2010; Kline, 2010). It can be said that this model contributed about 50% of the variance ($SMC = 0.50$) in the endogenous variables and thus is capable of predicting acceptance.

DISCUSSION AND CONTRIBUTION

This study explored the impact of sociotechnical factors on the reception of e-transactions with a focus on technological, organizational and social variables. The structural model indicated that all hypothesized relations, namely comparative benefit, compatibility, outcome certainty, reliance on the Internet and government agencies, technological communicability, and openness to change and conservatism, with the intention to use e-transactions were significant.

In the light of the technological perspective, a positive association has been shown between the intention to use e-transactions and comparative benefit, compatibility, outcome certainty and technological communicability. The findings for comparative benefit and compatibility are consistent with those in Al-Somali et al. (2015) and Schwartz and Boehnke (2004) and that for outcome certainty is aligned to the results of past studies (Hussein et al., 2011; Wirtz et al., 2015). People who are regular Internet users are more likely to perceive e-transactions as a comparative benefit. Thus, it would be reasonable to state that preferences for e-transactions are important to depict people’s

perceptions regarding Internet and government services (Zhu & Kraemer, 2005). Outcome certainty is also positively related to the acceptance of e-transactions. The Saudi Arabian culture is based on collectivism and people tend to share their experiences; this may also hold true for their experiences with e-transactions. However, a negative experience discourages numerous people from using online services (Pavlou, 2003). A rarely discussed factor related to e-government is its technological communicability. E-transactions are relevant to advancements in communication mediums. Thus, a positive impact by communication perspectives on transactions reveals the disposition of citizens using e-transactions as a medium to contact the government. In addition, e-transactions facilitate an improved understanding of different requirements and transaction processes as a communication medium. E-transactions also simplify the requirements for documents to complete certain transactions (Alhomod & Shafi, 2012). In other words, the enhanced acceptance of e-transactions can be observed with the increased preference for e-transactions as an important communication method. Although all of the variables of this study were found to be significant influencers on e-transactions acceptance apart from the “difficulty” variable. The items of this variable did not load clearly on its respective factor because citizens did not perceive the difficulty in using e-transactions.

In the light of the organizational perspective, another important factor contributing to the adoption of e-transactions is organizational reliance. The two most important elements of e-transactions are the Internet and administrative activities. The failure to establish people’s trust in both elements will negatively affect the use of e-transactions. The Internet is a key medium in transacting with the government and, without appropriate levels of trust, citizens will refuse to share their personal information with governmental organizations over the Internet (Abunadi, 2015). Nevertheless, the survey results showed that people prefer to use e-transactions because they are more convenient; for instance, they tend to eliminate long waiting periods, discriminatory treatments, inappropriate requirements for personal transactions, and lack of support from some government employees. On the other hand, people who do not rely on government agencies’ activities are more accepting of e-transactions. Thus, in situations where the government does not operate effectively in traditional means of delivery of services, the e-transaction has a better opportunity of being accepted as a communication medium for citizens and governmental organizations.

In the light of the social perspective, understanding values plays a major role in behavioral motivation, which varies by individual and society (Schwartz, 2003). Focus on validating the theory to provide clear insight in the general categorization of values (Abu-Shanab & Irani, 2014; Schwartz, 1992). BPV has been extensively used in many disciplines and is known to be theoretically sound; however, it has rarely been used in the context of information systems. To the best of our knowledge, no research has evaluated the relationship between values and e-transactions using BPV theory. This research focuses on assessing the values, perceptions, reliance, and their underlying impact on e-transactions (Al-Gahtani, Hubona, & Wang, 2007; Alshaya, 2002; Würtz, 2005).

A Study by Smith, Peterson, and Schwartz (2002) supported aspects related to human behavior and intentions. The significant positive association between conservatism values and e-transactions shows higher level of acceptance. Furthermore, results show that openness to change is a significant positive factor determining the acceptance. It was found that citizens are more willing to accept change and develop their skills in order to use e-transaction, and this is in line with the findings of Bagchi and Kirs (2009).

Theoretical Contributions

The current study developed a theoretical model for the acceptance of e-transactions that took the sociotechnical perspective into consideration. The sociotechnical perspective was considered as a theoretical layer to guide the development of the research model and to provide the three aspects of e-transactions rarely found in the literature. This model explains end-users’ viewpoint of e-transactions acceptance rather than the decision makers’ viewpoint. Such a comprehensive model was developed based on a number of theories adapted from different disciplines in order to explain

an important phenomenon within the information systems field (e-transactions acceptance). This model supported the concept of explaining end-user acceptance of e-transactions in the context of developing countries. It took a comprehensive sociotechnical perspective which is needed in such contexts because e-transaction is still in its initial stages where various issues need to be addressed.

In relation to the current literature of e-government, the contribution of this model is two-fold. First, it confirms the influence of technological factors of e-transaction acceptance within the context of developing countries. The technological variables in this study were adopted from previously well-known IS theories and re-defined to provide a suitable theoretical and practical explanation of e-transactions endorsement. The technological variables were comparative benefit, compatibility, outcome certainty and technological communicability. Although comparative benefit and compatibility variables have been discussed in e-government studies, they were only traditionally adopted with no clear re-definition of the variables. Both outcome certainty and technological communicability are seldom discussed in e-government research.

Second, this model empirically extends the theoretical models of e-government acceptance by integrating the technical perspective with social and organizational perspectives. Organizational factors including reliance on the Internet and government have not been considered as organizational factors in the e-government literature. Both of these factors were re-formulated to become closer to the organizational perspective and were essential in the explanation of the adoption of e-transactions. The social factors which include openness to change and conservatism were not found in the e-government literature and were very rarely discussed in the IS literature. These social factors have provided a perspective of e-government that is not only imperative but also opens the door for IS researchers to adopt the social perspective of openness to change and conservatism. This perspective extends the IS literature in the social explanation of e-transaction acceptance in particular and technology acceptance in general.

Practical Implications

The practical implications of this research involve providing guidelines to government agencies to facilitate citizens' acceptance of e-transactions so that e-transaction initiatives can become successful. The acceptance of e-transactions is related to a number of factors which should be considered by government agencies while implementing e-transactions. Since the acceptance of e-transactions is related to three major elements: technological, organizational and social, the guidelines are formulated as follows.

There are number of technological recommendations for the implementation of e-transactions. Firstly, users are motivated to embrace e-transactions if they provide a better advantage over other current methods of dealing with the government agencies. Hence, government agencies should develop e-transactions with overall benefits that surpass current methods. Secondly, government agencies should study current user needs relating to e-transactions, for example through surveys and interviews and develop e-transactions accordingly. Thirdly, the results and benefits of using e-transactions should be clarified and communicated to citizens through multiple channels of communication. Fourthly, e-transaction platforms should be designed to enhance communication between government agencies and citizens.

Organizational recommendations include the following: firstly, government agencies should provide clear policies and e-transactions technological safeguards that ensure secure environments for electronic transactions. Secondly, government agencies should handle information provided on their website and citizens' data carefully. Thirdly, government agencies should enhance citizens' awareness of the adapted approach to secure e-transactions on their channel of delivery (e.g. website).

Finally, social recommendations are also an important part of the practical implications. Firstly, awareness campaigns should be conducted to embrace openness to change towards e-transactions. These campaigns should involve all different sectors of society as the successful implementation of e-transactions add values to them. Additionally, sustaining the positive beliefs of citizens about the

usage of e-transactions as a social norm is important. This can be done through increasing the overall maturity level of e-transactions which will enable the spread of e-transaction usage through the society.

CONCLUSION AND FUTURE RESEARCH

This research has studied the endorsement of e-transactions in the light of a sociotechnical perspective. The fundamental aim was to explain the impact of sociotechnical factors on e-transactions. This sociotechnical perspective (technical, organizational and social) has provided a lens that is lacking in e-government research and this study addresses this issue. The research model has been developed and empirically tested rigorously taking into consideration related factors. People who use the Internet prefer e-transactions because of the associated advantages. The assessment of various sociotechnical factors remains important to analyze the wide acceptance of e-transactions. Bridging the gap in the literature on the use of e-transactions in the Kingdom of Saudi Arabia has been covered accordingly. Different models have been adopted to maximize the validity and reliability of the research and SEM was used to prove different hypotheses. Thus, this study serves as an important theoretical explanation relevant to the utilization of e-transactions in developing countries (Nydell, 2006).

The research model can be applied to different e-government technologies such as e-tendering, mobile government and government 2.0. This study can be extended to various countries including China, Japan, and Thailand, which share technical and other social characteristics with the Kingdom of Saudi Arabia. High context cultures perceive communication as an important factor and nations with conservatism values tend to influence technology acceptance. Incorporating mediating variables could extend the research model, particularly the social aspects with demographic variables. Longitudinal studies adopting the research model would add a deeper insight into the endorsement of e-transactions. Sociotechnical theories and BPV theories, in combination with other well-known IS related theories, would provide a perspective that is rarely discussed in the IS literature. A limitation to this study is the qualitative perspective which could provide extra explanation of the acceptance of e-transactions. This study only explored the government-to-citizen aspect of e-transactions and lacks the government-to-government and government-to-business areas of e-transaction. New trends of e-government are clearly emerging and although e-transaction is one of the most important technologies within the e-government realm, other newer technologies such as mobile and open governments are also relevant.

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APPENDIX

Table 6. Instrument items

Code	Item
CB1	E-transactions enables me to complete my dealings with government agencies faster.
CB2	E-transactions improve the quality of my dealings with government agencies.
CB3	E-transactions simplify my dealings with government agencies.
CB4	E-transactions increase my effectiveness while dealing with government agencies.
CB5	E-transactions provide me with higher levels of control over my dealings with government agencies.
CT1	E-transactions are compatible with how I prefer to deal with government agencies.
CT2	E-transactions are fully compatible with my present needs.
CT3	E-transactions are aligned with the way I prefer to deal with government agencies.
CT4	E-transactions are aligned with my way of life.
DFT1	E-transactions usage would take too much of my time.
DFT2	Performing e-transactions is too complicated and difficult to understand.
DFT3	Usage of e-transactions takes too much time in performing technical procedures.
DFT4	Learning how to perform e-transactions would take a long time.
OC1	I will not face any difficulties in telling others the outcomes of using e-transactions.
OC2	I can communicate the benefits of using e-transactions to others.
OC3	E-transaction results are clear to me.
OC4	There will be difficulties in explaining why e-transactions are beneficial.
TC1	Communicating with government agencies will be improved by using e-transactions.
TC2	Communicating with government agencies using e-transactions will improve my understanding of governmental dealings.
TC3	While using e-transactions, it is important to have textual and visual presentation of information.
USE1	I will use e-transactions to obtain information about my dealings with government agencies.
USE2	I will use e-transactions that are made available over the Internet.
USE3	Using e-transactions is an action that I will do.
USE4	I will not hesitate to provide my information to e-transaction websites.
USE5	I will use e-transactions to request information about my dealings with government agencies.
RI1	I can rely on government agencies to provide enough safeguards while using e-transactions on the Internet.
RI2	I can rely on government agencies to protect me from problems on the Internet while I am using e-transactions by providing adequate technological and legal structures.
RI3	I feel that government agencies provide safe and robust environments on the Internet to conduct e-transactions.
RG1	Government agencies can be relied on in carrying out e-transactions through their websites.
RG2	Government agencies can be relied on regarding their capability to provide services via e-transaction websites.
RG3	I rely on government agencies to keep my privacy and security while delivering services via e-transaction websites.
OP1	To be original and thinking about new ideas is important. I like to do actions in innovative ways.

continued on following page

Table 6. Continued

Code	Item
OP2	It is important to make my own decisions about what I do. I like to freely plan and select my activities.
OP3	I think it is important to be curious. I like to understand and be interested in different things.
OP4	I think it is important to be independent. I like to rely on myself.
OP5	It is important to perform many things in different aspects of life. I always try new things.
OP6	I like to take risks. I am always seeking new adventures.
OP7	I like surprises. It is important to have a stimulating life.
CN1	I think it is important to be content. I believe that people should not change their nature.
CN2	Religiousness is important. I try my best to follow religious beliefs.
CN3	It is better to do things using traditional methods. It is important to follow customs.
CN4	It is important to be modest and humble. I try not to draw attention to myself.
CN5	I believe that people should do as they are instructed. I think people should follow rules all the time, even when no one is observing.
CN6	It is important for me to act properly. I want to avoid doing anything people think it is wrong.
CN7	It is important to always respect parents and elders. Being obedient is crucial.
CN8	It is important to always be polite to others. I will never try to annoy others.
CN9	It is critical to live in a secure environment. I avoid doing any acts that jeopardise safety.
CN10	It is very critical for me to have a safe country. I think that government must take guard against any threats.
CN11	It is important to be organized and clean. I do not like messy things.
CN12	I try hardly to avoid sickness. It is very important to be healthy.
CN13	Stability of a government is important. I am concerned about protecting the social order.

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