A Conceptual Model of Citizens' Trust in e-Government

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Abstract: Governments all over the world have launched their e-government initiatives. As a consequence of the rapid development and implementation of e-government applications, research on e-government has gained a great deal of researchers' attention. However, very little has been written on citizens' likelihood to use and trust e-government. Most of existing literatures or trust in e-government focus on technical perspective such as PKI. This paper presents the citizens' trust aspects in e-government. The aim of this paper is to develop a conceptual model of citizens' trust in e-government. This is contextualized by investigation the factors that are most likely influence the citizens' trust in e-government transactions. The proposed conceptual model of citizens' trust in e-government is integrated constructs from multiple disciplines: psychology, sociology, e-commerce, and HCI. The model will help governments to facilitate and develop citizens' trust in e-government, in addition, it will fill the gap in the literature by providing a model citizens' trust in e-government.

Keywords: e-Government, trust, perceived risk, citizens' participation, technology acceptance model

1. Introduction

Electronic commerce, or in short, e-commerce and its sophisticated technologies have enabled governments and companies to provide their products and services for their citizens and customers through web sites. Online services are cheaper, more convenient, and easy to provide. Electronic Government or e-government has been classified as one instance of e-commerce (Schneider, 2003). Many governments around the world have launched their e-government initiatives to provide citizens and organisations with more convenient ways to access government information and services (Turban et al., 2002). Previous research has been carried out to evaluate the quality and quantity of the provided e-government services and the overall adoption of e-government. The results and findings of this research are varied depending on different factors such as development stage of the country itself, national culture, and government institutional structure. One factor that plays a vital role in e-commerce adoption, especially e-government, is a mature trust between citizen and the government. Although trust has been recently studied in e-commerce, there is still yet a lack of sufficient research that investigates the trust phenomenon in e-government. Most of the existing online trust literatures focus on e-commerce in particular B2C e-commerce. Furthermore, the literatures are based on developed countries in western part of the world, for examples (McKnight et al., 2002b, Gefen, 2000, McKnight et al., 2002a, Pavlou et al., 2003, Belanger et al., 2002, Jarvenpaa et al., 2000, Kervonen et al., 2000) and Far East (Cheung and Lee, 2003, Teo and Liu, 2007, Zeng et al., 2005) with a little focus on some developing countries in Latin America (Hawk, 2004), Africa (Barnard and Wesson, 2003, Bernard and Wesson, 2004) and Middle East (Abhilash, 2002).

The main underlying aim of this research is to identify the factors that most likely affect citizens' trust in e-government. This is contextualised by investigation of the elements and components that transact the trust beliefs in electronic services, wether these elements and components are related to technical aspects such as Human Computer Interaction (HCI), or related to business, psychological, sociological, or cultural perspectives.

2. Theoretical background

In the context of Government-to-Citizen category of e-government, there are two major objectives: providing citizens with effective information access and providing citizens with access to full range of e-government services online (National Research Council, 2002). The basic idea behind e-government is to allow citizens to interact with their government through the internet; for example, they ask questions and receive answers, get updated government regulations, obtain government official documents, fill applications, pay tax and bills, receive payments, and forth. The two forms of citizens' engagement in e-government are receiving e-government information and requesting e-government service (Warkentin et al., 2002). Citizens' participation in the e-government is important
for e-government to be success. Without citizens' engagement in e-government there is no mean for government to adopt e-government solutions.

The research model is shown in Figure 1. The research model consists of constructs and variables that would affect citizens' trust in e-government which in turn affects their engagement in e-government. The model attempts to formulate an important number of factors that have been observed to affect citizens' trust in e-government. These factors have been integrated from different models of trust that are exist in the literature. The proposed model applies to Government-to-Citizen (G2C) situation and it delineates the roles of significant factors in the process of trust in e-government.

![Research Model Diagram](image)

**Figure 1**: Research model

### 2.1 Trust in e-government

Although the trust concept has been intensively studied in a wide variety of disciplines, there is still a lack of agreed definition of trust. Hosmer (1995), for example, argues that the trust concept has never precisely defined and states that "there appears to be widespread agreement on the important of trust in human conduct, but unfortunately there also appears to be equally widespread lack of agreement on a suitable definition of the concept" (p. 380). Kee and Knox described the problem of defining and conceptualising trust, in earlier work of studying trust, when they claimed that the explicit definitions of trust are "conspicuously scarce" and added that "existing definitions of trust and suspicion are rather limited and almost peculiar to particular studies" (Kee and Knox, 1970 p. 357). Larzelere and Huston claimed that the postulates about trust "fail adequately to establish what they mean by trust and to provide satisfactory measures of the phenomenon" (Larzelere and Huston, 1980). Meize-Grochowski argued also that the concept of trust has been difficult to define (Meize-Grochowski, 1984). Luhmann observes the lack of the concept clarification for trust when he states that "...the elaboration of the theoretical frameworks, one of the main sources of conceptual clarification, has been relatively neglected." (Luhmann, 1998 p. 94). Dasgupta added that the trust notion has been rarely discussed (Dasgupta, 1998). McAllister expanded on this last point, saying "although trust's importance has been acknowledged, the matter of how it develops and functions has received little systematic theoretical attention." (McAllister, 1995 p. 25). Johns followed with the complaint that "some of the existing conceptualizations of trust are vague and do not appear to be based upon careful analysis." (Johns, 1996 p. 76). Karvonen agreed, attesting that trust has not been analysed properly either in philosophical, sociological or technical sense of the word (Karvonen, 1999). Hudson criticised that previous works which had studied trust have added up to "a confusing picture" (Hudson, 2004).
Trust has been intensively investigated as a phenomenon associated with e-commerce and has seen as a crucial factor that plays vital role in successful adoption of e-commerce applications. However, trust investigation as a phenomenon in e-government has not gained sufficient researchers' attention as in e-commerce. Most of trust investigation attempts focus in security technologies, in particular Public Key Infrastructure (PKI). There is a lack of research on citizens' trust in e-government as a concept not as public confidence on underline security infrastructure. Although citizens' confidence or perception of security sense increases their trust in e-government, this is only a part of the picture not the whole picture of citizens' trust in e-government. Trust in e-government goes beyond technical functionality as we will see in the following discussion of the proposed model.

Trust is an individual's (trustor, here is citizen) belief or expectation that another party (trustee, here e-government) will perform a particular action important to trustor in the absence of trustor's control over trustee's performance (Mayer et al., 1995). Hence, trust indicates that trustor will rely on trust behaviour (Rotter, 1971b). Trust is occurred in uncertain environment (Schlenker et al., 1973) where the risk is existed (Lewis and Weigert, 1985) and trustor is vulnerable for unfulfilled expectation or harmful outcomes (Deutsch, 1958, Zand, 1972). People use trust as mental mechanism to reduce the complexity and uncertainty of living environment (Luhmann, 1979).

Trust has been cited as important and crucial requirement for economic and social interactions (Baier, 1986, Barber, 1983, Dasgupta, 1998, Deutsch, 1958, Gambetta, 1998, Lewis and Weigert, 1985, Luhmann, 1979, Mayer et al., 1995, McAllister, 1995, Rotter, 1971a). In the context of e-commerce, trust has been also observed as a key value in e-commerce (Egger, 2003, Gefen, 2000, Gefen and Straub, 2004, Karvonen, 1999), and in e-government (Galindo, 2002). Furthermore, trust enables cooperative behaviour (Gambetta, 1988). Hence, Trust beliefs lead for trust behaviour; in this model trust in e-government will lead citizens to engage in e-government (Warkein et al., 2002).

**H1:** citizen trust in e-government positively influences intentions to engage in e-government.

### 2.2 Disposition to Trust

Individuals have differences in terms of tendency to trust other party (Rotter, 1971a) whether this party is a person, a group, an organisation, or a business. Disposition to trust “is a propensity or tendency to believe in the positive attributes of others in general” (McKnight et al., 2004 p. 36). Disposition to trust is affected by past experiences (Alesina and Ferrara, 2000); i.e. it is developed over a lifetime as people meet and deal with other people in different situations (McKnight et al., 2004). Disposition to trust has been identified as a construct for trust in many trust models (e.g. Egger, 2003, Gefen and Straub, 2004, Hudson, 2004, Kim and Kim, 2005, McKnight et al., 2002a, McKnight and Chervany, 2001, McKnight et al., 2004). McKnight and Chervany (2001) propose two constructs for disposition to trust *Faith in Humanity* and *Trustng Stance*. Faith in humanity is underline assumptions that others are usually upright, well meaning, and dependable. Trusting stance means that one believes that, regardless of other people reliability, one will obtain better outcomes result from dealing with other people; i.e. trust others until they prove trustor is wrong. Research has shown that disposition to trust has a significant impact on trust in online context (Pavlou and Gefen, 2004, McKnight et al., 2002a, McKnight et al., 2004). Trust in the web institution is positively affected by disposition to trust because people who trust other generally will trust institutions involving people (McKnight et al., 2003) such as online vendors. Thus, disposition to trust is positively associated with consumer's trust in e-commerce (Kim and Kim, 2005). In e-government context, disposition to trust has been argued to increase trust in e-government (Warkein et al., 2002). This leads to the following hypothesis:

**H2:** Citizens' disposition to trust positively associated with trust in e-government.

### 2.3 Familiarity

Familiarity is stage where people use their previous experience (Luhmann, 1979), interactions, and learning to understand what, where, why, and when people do what they do (Gefen, 2000). It has been argued that familiarity is precondition for trust (Luhmann, 1979) and that trust is occurred in a familiar world, and the familiar features of the world may be changed which in turn may impact the possibility of developing trust in human relations (Luhmann, 1988). The Luhmann's note about the impact of changeability of familiarity on trust is useful in understandability of e-government trust because the e-government environment of providing government services for citizens are different than tradition government environment. Therefore, most of citizens are not familiar with e-government
environment especially in the early stage of e-government which will influence citizens' trust in e-government.

H3: Citizens' familiarity with e-government is positively affect trust in e-government.

2.4 Institution-based Trust

Institution-based trust is the trustor's confidence that the situation structures are existent to facilitate outcome success of trusting behavior (Pavlou et al., 2003) and more importantly to impose sanctions when trust is breached (Humphrey and Schmitz, 1998, Lans and Bachmann, 1996). Following McKnight et al. (2002), institution-based trust is defined as "the belief that needed structural conditions are present (e.g., in the Internet) to enhance the probability of achieving a successful outcome in an endeavor like e-commerce" (p. 339). Institution-based trust is generated when trustor believes that safety, guarantee, insurance and other performance structures are presented to secure a situation (Pavlou et al., 2003, Shapiro, 1997). In economic context, institution-based trust "proved to be the most resilient,... expanded and elaborated [trust creating mode] in impersonal economic environment (Zucker, 1986 p. 98). In e-commerce context, institution-based trust has been argued to be best suited for online marketplaces because the secure online transactions (between and buyer and seller) are conducted under the aegis of third party who constitute an institutional context (Pavlou and Gefen, 2004).

McKnight et al. (2002a) defined two dimensions (sub-construct) of institution-based trust structural assurance and situation normality. Structural assurance is related to structures that exist to promote success such as guarantees, regulation, and legal resources. Situation normality is the belief that success is expected as the environment is normal and in appropriate order. Example of situation normality in internal environment is the expectation that infrastructure of the communication is secure, i.e. security mechanisms and techniques (encryption) are employed to secure the communication channel. Pavlou et al. (2003) proposed third dimension for institution-based trust -- facilitation conditions, which "the underlying non-governance mechanisms that support transaction success". Examples for facilitate conditions are standards which are facilitate the conditions for successful transaction by supporting the use of interpretable IT platforms (Pavlou et al., 2003). Accordingly, the following hypotheses are proposed:

H4a: structure assurance trust positively affects citizens' trust in e-government.

H4b: situation normality trust positively affects citizens' trust in e-government.

2.5 Website design

Several research studies have been conducted to identify the design elements that communicate trust in e-commerce web sites. Studio Archetype and Sapient study (1999) is significant research that has investigate trust in e-commerce from HCI perspective. They identified six types of forms that communicate consumers' trust in an e-commerce website: Seal of Approval, Brand, Navigation, Fulfillment, Presentation, and Technology. All these type of forms seem to be applicable for e-government except for Brand form. E-government is characterized by relationships between citizens and the authorities as result of exercise of right using the internet as tools (Galindo, 2002), whereas e-commerce involves transaction and economic exchange between consumer and business, therefore branding in e-government is not applicable in e-government. It is assumed that the logo of government ministries and organisation in the e-government website will replace seal of approval in the present model. This is because the government in not business organisation therefore there certification and seal of approval would be given by government itself. Based on empirical evidence (Studio Archetype/Sapient and Cheskin Research, 1999), the following hypotheses are proposed.


H5c: Clearly indication of fulfillment in e-government website positively affects citizens' trust in e-government.
H5d: E-government website presentation positively affects citizens' trust in e-government.

H5e: Appearance of information about technology which e-government website technically functions positively affects citizens' trust in e-government.

Other important components that are related to website design quality are: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). PU and PEOU are two main components in Technology Acceptance Model (TAM) (Davis, 1989, Davis et al., 1989). TAM is an adaptation of the theory of reasoned action (TRA) (Fishbein and Ajzen, 1975). PU is the degree to which the user believes that the using of the system enhances his or her task performance. PEOU is the degree to which the user believes that using the system is easy and free of hard effort. TAM has been applied to the usability of e-commerce websites (Gefen et al., 2003a); also several researchers have hypothesised that PEOU and PU are positively affect trust in e-vendor (Chau et al., 2007, Koufaris and Hampton-Sosa, 2004, Koufaris et al., 2001, Pavlou, 2003, Tang and Chi, 2005) or positively affect behavioural intention to transact (Klopping and McKinney, 2004, Lui and Jamieson, 2003). In e-government context, it is most likely that easy to use user interfaces in e-government websites and perception of usefulness for citizens will increase citizens' trust in e-government. Accordingly, the following hypotheses are proposed:

H5f: PEOU of e-government website positively influences citizens' trust in e-government.

H5g: PU of e-government website positively influences citizens' trust in e-government.

2.6 Perceived risk

Risk is closely connected with trust; if there is no risk, there is no need for trust (Luhmann, 1988). Therefore, trust is manifested with present of risk where the possible damage is greater than advantage that is sought (Deutsch, 1960). Trust "derives from the calculus of gains and losses, weighed by perceived risks" (Rousseau et al., 1998). However, "placing trust means suspending, discounting, bracketing the risk, acting as if the risk were not existent" (Sztompka, 2003 p. 31). The perceived risk moderates the relations between trusting belief and intention to trusting behaviour (Gefen et al., 2003b). Accordingly, the following hypothesis is proposed:

H6: The positive influence of trust on e-government is greater when perceived risk is high.

![Research Model and Hypotheses](image)

**Figure 2:** Research model and hypotheses
3. Research methodology

To test these hypotheses, citizens will be surveyed to collect data regarding the research model variables. This study will employ a sample of over 500 citizens in Saudi Arabia. Saudi Arabia has initiated a huge e-government program with a massive investment of 3 billion Saudi Riyal (US$800 million) (Alsabti, 2005). This program consists of many different projects divided among a wide variety of government ministries and organisations (Alsabti, 2005). Existing scales from literature will be reviewed in order to derive construct measures in the survey instrument or to develop new scales. For each construct, items will be carefully adapted or developed. Likert (Likert, 1932) scales will be used to measure construct items as the primary method of gaining respondent attitude throughout the questionnaire.

4. Discussion and conclusion

E-government initiatives usually involve a massive investment from government to develop a high standard service delivery to the citizens though one-stop portal. However, the success of these initiatives is at risk if the citizens do not accept and trust to engage in the online transactions with their governments. Thus, the development and maintaining of citizens' trust in e-government is considered as an important and crucial step that government should take into account even before the actual implementation of the e-government solutions. Citizens' trust in e-government will facilitate the adoption of e-government projects. Therefore, the proposed conceptual model in this paper is based on the literature review from different disciplines.

There are many factors that affect the citizen's trust to participate and rely on the online governmental services. Institute-based trust plays fundamental role in the e-government success as the citizens need to have confidence in the infrastructure security that underlines the e-government portals and need to have confidence in the legal systems that surround the e-government environment. The quality of the government websites is another important factor that facilitates the citizens' trust in e-government.

Citizens are individuals who have different disposition to trust and understand these differences helps government to design and develop e-government solutions that encourage the citizens to participate in and use e-government. Perceived risk is an important factor that affects the citizens' acceptance of e-government. Controlling and managing this risk is a key success to adopt e-government solution.

The culture factor also plays a crucial role in the citizens' trust and acceptance of e-government. Applying this study to Saudi Arabia, which has a unique characteristics, will contribute to e-government literature by comparing the results with similar studies in other nations.

References


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