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# A STUDY OF CUSTOMERS' TRUSTING BELIEFS IN GOVERNMENT-TO-CUSTOMER ONLINE SERVICES

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## Abstract

*This study examines online transaction web sites of the US government and provides an understanding on the effect of government authority on customers' perception of trust in G2C online services. Though government web sites are expected to have advantages over private organizations in public reputation and trust, our preliminary study shows that this may not always be true. In this study, government authority as an antecedent of trust and transaction intention is empirically tested, and other factors that might affect the advantage of authority in government sites are explored. We build on previous trust and information assurance research, and present research hypotheses for further development.*

**Keywords:** E-government, G2C, online services, transaction intentions, initial trust, authority, information assurance, structural assurance, trusting beliefs

## Introduction

The US government has been investing money and efforts to provide better services for its potential customers,<sup>1</sup> leveraging the power of information technology in general, and the Internet in particular (Hiller and Belanger 2001). Government web sites are supposed to inherit genuine authority of the owning government bodies and to have advantages over privately owned web sites in terms of trust of the general public. However, neither the real impact of the authority nor online practices of government bodies have received due attention. This study tests the effects of government authority on the trust of the potential customers in government web sites, with the special focus on online transaction practices of government bodies. Most of the G2C services are still limited to one-way information dissemination (CEG 2001), and the public will face with many new forms of G2C services as they evolve over time. Therefore, we focus on the initial relationship between G2C websites and the customers in this study.

The study will provide a better understanding on the effect of government authority as well as possible weakness and strengths of online government services in the context of the public's trust in e-government services. This study will also apply findings from the B2C context to a new, G2C context.

## Literature Review

### *Trust, Trusting Beliefs, and Trusting Intention*

Trust has been known as a critical success factor of e-commerce and has received significant attention in private sector e-commerce research. Lack of trust in online entities can prevent web customers from providing personal information (Hoffman, et al. 1999) and hinder adoption of e-commerce (Bhattacharjee 2002). This importance of trust will be also true in a G2C

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<sup>1</sup>Though G2C stands for Government-to-Citizen in some references, we use the term "customer" in this paper as we study online government services that are not limited to citizens or constituents in a narrow sense. Our G2C model can be considered as a G2IS (Government-to-Individual Service). For detailed definitions of e-Government types, refer to Hiller, J. S. , and Belanger, F. "Privacy Strategies for Electronic Government," The PricewaterhouseCoopers Endowment for The Business of Government, Jan. 2001.

relationship as G2C services share the infrastructures, the Internet, and require personal information (Sabo 1997). Bernhardt et al. found lack of trust in many US government-sponsored websites (Bernhardt, et al. 2002). We adopt the definitions of trust by Mayer et al. (1995), “the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control the other party”. This definition reflects trustors’ vulnerability and lack of control over the trustee. When a customer provides her personal information to an e-government website, she takes risks of the sensitive information being misused or stolen and needs to trust the e-government over which she doesn’t have control. Following the definition, McKnight et al. decomposed this concept into two constructs: trusting intention and trusting beliefs (McKnight, et al. 1998). According to their typology, trusting intention refers to the willingness of a trustor to depend on the trustee in a given context, and trusting beliefs are the beliefs of a trustor in the trustee’s competence, benevolence, and integrity. These three trusting beliefs refer to the beliefs that the trustee is able to do what the trustor needs, that the trustee cares the trustor, and that trustee is honesty and will keep its promises, respectively (Bhattacharjee 2002; Gefen 1997; Mayer, et al. 1995; McKnight, et al. 2002; McKnight, et al. 1998). This typology was also applied to web trust model and has the advantage of an available measurement that already has been tested in an e-Commerce context (McKnight, et al. 2002).

### ***Antecedents of Trusting Beliefs and Trusting Intentions***

The initial trust model advanced by McKnight et al. (1998) explains how trust level in an initial relationship can be high. According to their study, 1) personal disposition to trust, 2) institution-based trust, 3) cognitive processes, and interactions among these three factors can lead high level of trust without previous experience or knowledge on the other party (McKnight, et al. 1998). Among these concepts, we are particularly interested in the cognitive process and institution-based trust. Personal disposition is not included in our model because it is internal to individuals and cannot readily be manipulated by e-government initiatives.

Institution-based trust refers to a trustor’s beliefs that impersonal structures (e.g., regulation, technology, or social norms) exist and insure the trustee will behave as expected (McKnight, et al. 1998; Shapiro 1987b; Zucker 1986). Thus, institution-based trust can also lead to high trusting beliefs and trusting intention irrespective of prior experience with the trustee. Institution-based trust has two sub-constructs, situational normality and structural assurance belief. Situational normality is more concerned with customers’ trusting beliefs in online entities in general (McKnight, et al. 2002) and expected to have equal impact on both B2C and G2C e-commerce. Structural assurance works as a safeguard of a relationship in such forms as regulations, guarantees, and legal recourse (McKnight, et al. 1998; Shapiro 1987a). Unlike situational normality, structural assurance in G2C context will be higher than B2C context as government authority itself is an avatar of regulation and control.

Categorization process is a type of cognitive process that determines the level of trustworthiness on the basis of cognitive cues, first impression, or second-hand knowledge such as reputation, enabling trustor to develop high trusting beliefs in a new relationship (McKnight, et al. 1998). This situation can happen when 1) a trustor believes the trustee shares common goals and value (Kramer, et al. 1996), 2) the trustee has a good reputation or belongs to a reputable organization (Dasgupta 1988), or 3) the trustor has a positive stereotype on a certain category and place the trustee in the category on the basis of obvious characteristics such as appearance or occupation (Dion, et al. 1972; Riker 1971). These processes are referred to as unit grouping, reputation categorization, and stereotyping, respectively and explain why different e-commerce contexts or websites may receive different level of consumer trust.

### ***Information Assurance***

Trust is not just a “good-to-have” option for entities on the Internet. Online customers are losing their money and privacy by malpractice of online entities resulting in skepticism toward e-Commerce (ConsumerWebWatch 2002; Hoffman, et al. 1999; IFCCFBI 2002). Information assurance is a concept proposed to address this kind of problems. Information assurance has three dimensions: security, privacy, and business integrity (Iyer, et al. 2002; Iyer, et al. 2003).

The security dimension of information assurance concerns unauthorized or inadvertent access or disclosure of sensitive data and focuses on encryption techniques and security in physical business environments. Security has been identified as one of the most important aspect for e-government success (Hof 2002). Privacy dimension shares core tenets with the Fair Information Practice Principles provided by the US Federal Trade Commission. Business integrity is more concerned with business activities such as refund/return policy, authenticity of the business, business processes, quality of customer service, and dispute resolution. Recent propagation of online 3rd-party seals such as WebTrust and BBBOnline confirms the importance of information assurance (Pugliese 2000; Srivastava and Mock 1999).

## Conceptual Model and Hypotheses

We construct a model of online government service (Figure 1.) based on the initial trust model (McKnight, et al. 2002; McKnight, et al. 1998). Cognitive categorization processes in the 1998 model were not included in the 2002 measurement model. It seems reasonable because they are processes, rather than perceptions, which will explain the causality paths from the exogenous variables to the trusting belief sub-constructs.

Authority and web site attributes are the major determinants of trusting beliefs, which in turn affect the transaction intention. We assume that customers, who will usually be citizens or residents, credit their government authority with power to influence or command online entities' behavior. Web site attributes include information assurance elements such as user authentication, privacy policy, and 3rd-party seals. Structural assurance, or structural assurance belief represents customers' beliefs in the e-commerce environment, is hypothesized to mediate government authority. Domain of authority is the area in which the authority provides services with core competence and is hypothesized to moderate the authority effects on competence belief. Categorization processes that link the major determinants and other endogenous constructs are displayed in *italics*. Trusting belief is decomposed into competence belief, benevolence belief, and integrity belief, as described in the earlier section. The needs for trust come from expected online transactions in this context, and trusting intention is represented by transaction intention. In this context, we use the term "agent" to designate the entity that carries out or provides online services irrespective of the nature of the entity because some customer may believe all G2C services are provided by a related government body, while the others can understand the exact arrangement between the government and 3rd-party internet service providers for government services.

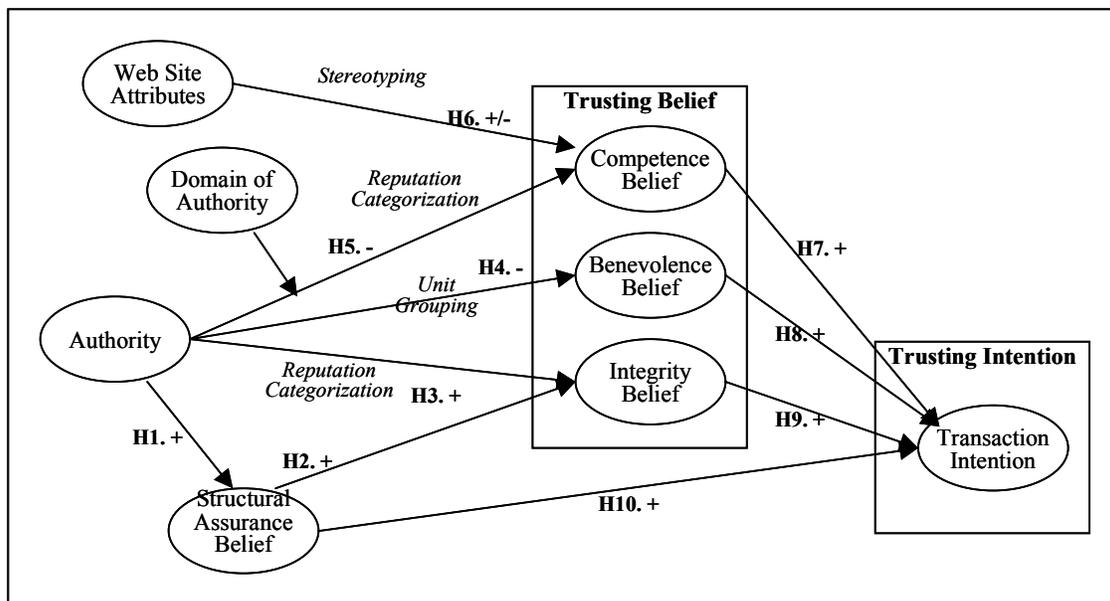


Figure 1. Analytical Model of Online Government Service

Authority is expected to have positive effects on structural assurance belief and integrity beliefs because the US government has been provided regulations and legal protections for customers (McKnight, et al. 1998). For example, the US Security and Exchange Commission mandated independent auditors certified financial statements for all publicly traded companies to protect investors (Iyer, et al. 2003). Legislation of the Children's Online Privacy Protection Act (COPPA) is another example of the government's efforts in the cyberspace.

Increased structural assurance belief will most likely increase integrity beliefs. Mayer et al. (1995, p.727) suggested that a strong control system can hinder trust development because "a trustee's [favorable] actions may be interpreted as responses to the control rather than signs of trustworthiness." Customers are likely to link structural assurance beliefs to integrity rather than

benevolence. By reputation categorization process, a government agent would inherit the governing body's reputation as a regulation driven organization, resulting in beliefs that the agent would also observe the regulation, thus high integrity beliefs.

- H1. The authority of online government agents will positively affect customers' structural assurance belief.*
- H2. The structural assurance belief on online government agents will positively affect customers' integrity belief.*
- H3. The authority of online government agents will positively affect customers' integrity belief.*

Government has less direct interaction with public, except in the form of police, IRS, INS, etc., and in essence is an avatar of control. Also the objectives and value of government are usually perceived different from those of customers. These differences will prevent customers from putting government agents into the same category as the customers (McKnight, et al. 1998). The perceived dissimilarity and unfamiliarity is hypothesized to lower benevolence belief (Mayer, et al. 1995). Some empirical studies in political science field support this hypothesis. Perceived distance between citizens and the government was found to negatively affect the citizens' trust in the government (Miller and Borrelli 1991), while political trust includes such political cynicism measure as "would you say the government is pretty much run by a few big interests looking out for themselves ...?" and "do you think that quite a few of the people running the government are crooked...?" (Hetherington 1998). Also, a survey, released by The Washington Post on Sunday, January 28, 1996 examined public understanding, perceptions and attitudes about the role of government and revealed that Americans are distrustful and cynical about the federal government and its abilities to act effectively.

- H4. The authority of online government agents will negatively affect customers' benevolence belief.*

According to Mayer et al. (1995), ability, or competence, is a domain specific concept, and, in e-Commerce context, competence is closely related to technological advancement. Government bodies are usually not specialized in e-Commerce technologies. Thus, government authority, as opposed to private e-Commerce businesses, will have negative effects on competence belief, while the domain of the government service moderates the relationship. On the absence of strong effect of authority, the competence belief will be largely influenced by the web site attributes. Stereotyping processes will examine such attributes as professional appearance of the web site just like they do in B2C e-Commerce sites. McKnight et al. (2002) reported significant path coefficient from site quality to trusting beliefs. Information assurance elements that are included in the web site attributes will play important role in this situation. Presence of 3rd-party security seals and cutting edge encryption technology will supplement the competence belief in technology domain.

- H5. The authority of online government agents will negatively affect customers' competence belief, and this relationship will be moderated by the domain in which the government body is specialized.*
- H6. The web site attributes, including information assurance elements for security, will determine customers' competence belief, and the magnitude of the web site attribute effects will be larger than the authority effects.*

Positive relationships between the trusting beliefs<sup>2</sup> and trusting intentions have been suggested by previous research (Mayer, et al. 1995; McKnight, et al. 2002; McKnight, et al. 1998). In this study, we will test these hypothesized relationships.

- H7. The competence belief will positively affect customers' transaction intention.*
- H8. The benevolence belief will positively affect customers' transaction intention.*
- H9. The integrity belief will positively affect customers' transaction intention.*

Structural assurance belief is expected to positively influence trusting intention, especially in the early stage of relationships (McKnight, et al. 1998). In G2C online service, the online agents who provide government services are subject to every available regulation and legal guideline under the control of the government. Thus, customers, even without trusting belief, can reasonably predict that the agent will provide the due services and will show high trusting intention, which is committing the transaction.

- H10. The structural assurance belief will positively affect customers' transaction intention.*

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<sup>2</sup>Mayer et al. used the term "perceived trustworthiness" for the concept "trusting beliefs" in this study.

## Preliminary Research Findings

As a preliminary study of this research, we examined potential customers' behavior in Department of Natural Resources (DNR)<sup>3</sup> web sites of 27 US state governments and in 36 state university web sites, using 42 student samples with repeated measures. The study was to examine customers' perception and behavior in different types of G2C sites. The paired t-test results (table 1.) from the preliminary study revealed that DNR sites have significantly lower reputation than state universities ( $t=2.578$ ,  $p<.05$ ), and customers require 3rd-party endorsements more for DNR sites ( $t=2.136$ ,  $p<.05$ ). Customers' online transaction intentions ( $t=3.233$ ,  $p<.01$ ) and willingness to provide personal information ( $t=3.233$ ,  $p<.01$ ) in the two site groups are also significantly different, showing preference to the state university group. From these results, we can infer that not all the government sites command the same level of trust and that they cannot solely rely on their authorities expecting successful online services. These results further confirm the importance of testing the hypotheses presented in previous section.

**Table 1. Paired T-Test Results**

	Mean (DNR)	Mean (Univ.)	df	T
Perceived Reputation	4.71	5.32	40	2.578*
Need 3 <sup>rd</sup> -Party Endorsements	4.45	3.74	41	2.136*
Online Transaction Intention	4.52	5.62	41	3.233**
Intention to Provide Personal Information	4.57	5.31	41	2.245*

\*:  $p<.05$

\*\*: $p<.01$

## Conclusion

The objectives of this study are to enhance understanding on the effect of government authority and to find out possible weakness of online government services. As revealed in the preliminary study, government authority may not always work in favor of its online services. This study will identify the shortcomings and suggest ways to improve customers' trust on government online services as well as transaction intentions. The different characteristics between government and private sector organizations endorse the needs of this test, and the result will provide valuable improvement to the online trust model.

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<sup>3</sup>In some states, the government bodies that provide the same service have a different name. However, we use DNR as majority of states use this name.

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