35. Understanding Information Systems Usage Behavior in E-Government: The Role of Context and Perceived Value

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Abstract
This work provides an alternative conceptualization of the information systems (IS) success model for further understanding of user behavior in government. A context-value-behavior framework is proposed. This study investigates the relationships among perceived quality, normative pressure, perceived values, satisfaction and intention to use IS in government. Analytical results indicate that user intention to use IS in government is markedly influenced by social value and functional value and not by conditional value and satisfaction. The contextual factors, i.e. normative pressure, information quality of IS, and service quality from support of IS department, are crucial for enhancing users’ intention to use IS in government.

Keywords: E-Government, IS success model, consumption value, quality, usage behavior

Introduction
This study examines the effects of normative pressure and perceived quality on behavioral outcomes to use information systems (IS) in government agencies through the mediating effects of perceived values. DeLone and McLean (D&M) (2003) identified intention to use IS as a function of user quality perceptions of the system, information and services. Sheth, Newman and Gross (1991) determined that consumer behaviors are positively correlated with their perceptions of value. Perceived value is increasingly recognized as essential to purchase intention in marketing research (Shank 2002). Performance has an indirect effect on behavior mediated by consumer-perceived value (Toelle 2006). In order to develop online e-government services that provide participants with accessible, relevant information and quality services that are more expedient than traditional ‘brick and mortar’ transactions, government agencies must first understand the factors and path that influence user adoption of IS (Carter and Belanger 2005). However, no study has characterized the relationships among IS context, users’ internal values and behavioral intention to use IS in government. This study tries to make an academic and practical contribution to this area of research.

Today, the focus of organizational operation is gradually shifting from manufacturing and business activities to attaining and utilization of knowledge (Dawes and Prefontaine 2003). Electronic government is no longer merely an option but has become a necessity (Gupta and Jana 2003). The electronic government model in Taiwan focuses on the following three online governmental services: government-to-government (G2G) services; government-to-citizens (G2C) services; and, government-to-business (G2B) services. In the e-government context, government agencies must use IS. User value is an antecedent judgment of usage. Therefore, the concept of “usage” in the IS success model was further deconstructed into three antecedents: conditional value; functional value; and, social value.

When preparing or delivering a service, a government agency typically references pertinent records or documents and, in most cases, creates new records that reflect and document the
service rendered. Management of such documents, records, and archives is essential and tedious, frequently challenging government agencies that essentially become information businesses. Several trends have emerged in the management of government records/archives, such as a fundamental shift from paper-based storage to computer-based systems, from paper to electronic documents, from managing information to supporting its access and retrieval, and from a cost-reduction focus to continued process improvement (Stephens 1998). These trends all point to the need of government agencies for electronic record management systems (ERMS) for digitizing official records and archives daily.

Value and attitude affected by context and previous experience determine human behavior. Informational environment shapes the online service use and behavior (Lamb, King and Kling 2003). According to the Archive Act, each government agency in Taiwan is responsible for managing its official records electronically with necessary accessibility and security. When issuing or receiving an official document, an agency must create electronic records and transfer record catalog to the National Archives Administration (NAA) through online systems developed by NAA. This study takes the government as an arena of consumption in which employees engage in quests for perceived value, and construct and confirm their identities as consumers of IS. Past use is the most important predictor of intention to and future use, and its impacts increase as past usage increases (Kim 2001). Holbrook (1994) proposed that consumer behavior is motivated by perceived values. Perception of quality has effects on desirable outcomes such as consumer intent to recommend a service (Shank 2002). By combining D&M IS success model and consumption value approaches, a context-value-behavior framework adapted from IS success model is proposed. This study tries to underline the relationship in which contexts affect perceived value and subsequent behavior.

Based on the studies by Shannon and Weaver (1949) and Mason (1978), DeLone and McLean (1992; 2003) proposed a model of IS success to measure whether IS are effective in organizations. In this model, IS quality and information quality influence use status and user satisfaction with respect to the IS, use status and user satisfaction then influence his/her behavior, and, in turn, affect organizational performance (DeLone and McLean 1992). The consumer value framework developed by Sheth, Newman and Gross (1991) explains why consumers make consumption choices based on consumption values, and explains why consumers decide to or not to purchase a specific product, why consumers choose one product over another, and why consumers choose one brand over another. For IS use in government, perceived value of the IS is based on user values. Therefore, the concept of consumer value in marketing research is adopted and utilized in this study for perceived value of IS users. This proposed research model has added perceived value to the constructs of quality, user satisfaction and intention by testing a model that applies the relationship between perceived quality and perceived value to the specific act of satisfaction and intension to use IS in government. Once the context-value-behavior framework is approved by government setting, context factors influencing users’ consumption value could be added into framework that influence path from operating context to behavior will be well understood.

**Literature Review and Hypotheses**

The IS success model proposed by DeLone and McLean (2003) encompasses IS quality characteristics (system quality), quality of IS processing (service quality), quality of IS output (information quality), consumption of IS output (usage), user reaction to the IS (user satisfaction), and IS influence on user behavior (intention to use). User satisfaction is a user reaction to the using of IS output. Service quality is closely related to user satisfaction, whereas satisfaction is defined as the gap between expectation and feelings toward the service.
rendered (Pitt, Watson and Kavan 1995). Thus, system quality, information quality and service quality are determinants of use intention (DeLone and McLean 2003).

Additionally, from the perspective of technology acceptance model, normative pressure directly influences behavioral intention (Venkatesh and Davis 2000). Subjective norm is “the realization of those important reference people to a person’s perception of whether he/she shall carry out such a behavior” (Fishbein and Ajzen 1975). Even if he/she does not favor performing a given behavior, if he/she believes that important reference people believe that he/she should perform this behavior, then he/she will likely perform such a behavior. Due to the characteristics of government, regulations based on rules and laws are important to IS operations in government agencies. Therefore, normative pressure that regulates behavior of government IS users is included in this study.

Customer value comes from performance outcome and reflects customer behaviors. Perceived value is a construct representing how consumers judge “what was received to acquisition costs (e.g., financial, psychological, effort)” (Oliver 1997). Zeithaml (1988) defines value as “the consumer’s overall assessment of the utility of a product based on perceptions of what is received and what is given.” Customer value is a customer-perceived preference for and assessment of product attributes, attributes performance, and consequences arising from use that facilitate achieving customer objectives and purposes in use situations (Woodruff 1977). This definition links perceived customer value to product or service use, and attributes perceived value to the perceived difference between what a consumer perceives and what they pay in exchange for what they receive (Woodruff 1977). Behavioral intentions represent various consumer responses such as intention to use a product or service, and complaint intention (Shank 2002). Perceived quality is a consumer’s perception of “the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied requirements” (Oliver 1997). Service quality is closely correlated with user satisfaction, in which satisfaction is defined as the gap between expectations and the perception of service rendered (Pitt, Watson and Kavan 1995). Furthermore, system quality and information quality influence user satisfaction and IS usage, and user satisfaction and IS usage reflect individual behavior (DeLone and McLean 1992). Thus, based on the IS success model, this study utilizes system quality, information quality and service quality as antecedents of consumption values to examine user satisfaction and intention to use IS in e-government.

In addition to quality variables, institutional theory argues that stakeholders, including government agencies, impose normative pressures on firms (Delmas and Toffel 2004). Past use of IS is the most important predictor of intention to use and future use, and its influences increases as past use increases (Kim 2001). Previous experience of IS usage is the basis of user consumption values and behaviors. The theory of reasoned action (Ajzen 1991) and attribution theory (Wated and Sanchez 2005) account for human behavior in terms of perceived behavioral controls. Normative pressure directly affects user intention to use IS (Venkatesh and Davis 2000). Normative pressure is based on political support for stringent regulations and regulatory threats that impede operations based on operational performance (Delmas and Toffel 2004). When a person perceives that a social actor wants him/her to perform a specific behavior and has the power to reward or punish him/her, then the normative pressure will directly influence intention to perform that behavior.

Sheth, Newman and Gross (1991) explains why consumers make consumption choices based on consumption values and identifies the following five consumption values that influence
consumer choice behavior: function, social, emotional, epistemic, and conditional. Sweeney and Soutar (2001) identified the value construct and measures customers use when analyzing a product prior to purchase. These measures can be applied to assess customer perceptions of the value of consumer durable goods at a brand level within a purchase context and to determine which consumption values underscore purchase attitudes and behaviors. Sweeney and Soutar identified the following four distinct value dimensions: emotional, social, quality/performance and price/value. All these value dimensions helped explain consumer attitudes and behavior. As government is a relatively stable entity, epistemic value and emotional value are not suitable when analyzing IS usage in e-government. The influence of epistemic value on commitment is not significant (Pura 2005). Therefore, this study uses conditional value, functional value and social value as construct of value when analyzing the influence path from context to IS user behavior.

Given the literature review, several hypotheses were proposed. System quality encompasses measures of the information processing system itself (DeLone and McLean 1992). Hamilton and Chervany (1981) argued that user interface, response time, reliability, and system flexibility are parts of a scheme for measuring system quality. Conditional value is the perceived utility obtained by an alternative consumer resulting from a specific situation or set of circumstances a choice maker faces (Sheth, Newman and Gross 1991). Holbrook (1994) proposed that conditional value depends on the context in which value judgment occurs, and is bound to a particular situation. Since a user interface encourages users to use various interaction models and attain self-achievement and satisfaction, consumers are affected by system context. Moreover, reliability has a direct effect on customer value (Toelle 2006). The reliability of a stable IS helps users improve their intelligence and skills and develop new interactive models between humans and machines. System quality is not only functions of an IS, but also generates symbolic meaning for information users. Imperceptibly, system quality is closely related to user-perceived conditional value. Hence, the following hypothesis is proposed.

H1: System quality positively affects conditional value.

Information quality encompasses measures of information system output, namely, the quality of information offered by a system, primarily in the form of reports (DeLone and McLean 1992). Ahituv (1980) created a semantic instrument that had measures of relevance, accuracy, timeliness, aggregation, and formatting. Functional value is the perceived utility obtained from the capacity of an alternative for functional, utilitarian, or physical performance (Sheth, Newman and Gross 1991). Information quality positively affects functional value. That is, the matches between outputs of an IS and user’s requirement affect subjective value of information, including assignment relevance, richness of information, and immediateness. Additionally, when users recognize that information meets their needs, this recognition forms a functional value of this information. Moreover, user recognition of quality for an IS is positively correlated with functional value. Restated, information quality is positively correlated with functional value. Therefore, we propose the following hypothesis.

H2: Information quality positively affects functional value.

Many researchers, who proposed that service quality is essential to IS success, applied and tested the 22-item SERVQUAL measurement instrument in marketing and IS contexts (Kettinger and Lee 1995; Pitt, Watson and Kavan 1995). Service quality sourced from IS success model indicates that an information provider offers various services for information recipients, including timely service, consideration, and assurance (DeLone and McLean 2003). Service performance directly affects customer value (Toelle 2006). Service quality of
information providers significantly affects the functional value concept of information recipients. Hence, we propose the following hypothesis.

H3: Service quality positively affects functional value.

Normative pressure means that a potential decision maker recognizes a need for making decision and is influenced by individualism (Hartwick and Barki 1994). Normative pressure is positively associated with social value. Social value is perceived utility obtained from an alternative’s association with one or more particular social groups (Sheth, Newman and Gross 1991). Since normative pressure means that when an individual recognizes that he is a social actor, he will be expected to play an appropriate role by society and thus influenced by others. Social values enforce particular behaviors and reward or punish these behaviors (Sweeney, Soutar and Johnson 1999). Furthermore, Holbrook (1994) argued that social value was related to one or several social groups based on previous or present geographic locations. Interactions among the economy, culture, morality, and groups produce social values and specific symbolic meanings that satisfy self-valued performance. Values of an excellent governmental leader will have a significant affect on and form the extent of social value. Since operations of ERMS are regulated by the Archives Act in Taiwan, government agencies are influenced by upper-level or other agencies. Thus, we propose the following hypothesis.

H4: Normative pressure positively affects social value.

User satisfaction is affected by user perception. Perceived value positively relates to customer satisfaction (Shank 2002). User perception compares differences between expected compensation and input costs (Churchill and Surprenant 1982). Conditional value is the perceived utility obtained by an alternative consumer and refereed to circumstances that impact choice (Sheth, Newman and Gross 1991). Conditional value is the base of decision-making to a specific situation or circumstances. User satisfaction encompasses measures of recipient response to use of IS output (DeLone and McLean 1992). Therefore, conditional value affects user satisfaction. Similarly, functional value is the perceived utility obtained from solution’s capacity and is derived from effective task fulfillment (Pura 2005). Economic satisfaction satisfies specific need, solves specific problems, and creates user satisfaction naturally. Functional value increases user satisfaction as functional value makes users feel that using IS is convenient. Therefore, functional value affects user satisfaction. Additionally, social satisfaction is a non-economic psychological satisfaction (Geyskens, Steenkamp and Kumar 1999). Customers can receive social satisfaction from interacting with his or her service providers (Ramaseshan, Yip and Pae 2006). Social value enhances user satisfaction as a user recognizes that the IS is worthy of a user’s social identity and status. High-level affective value associated with an information product will support the emotional and subjective needs of a user, thereby generating user satisfaction. Hence, we propose the following hypotheses.

H5a: Conditional value positively affects user satisfaction.
H6a: Functional value positively affects user satisfaction.
H7a: Social value positively affects user satisfaction.

Intention to use indicates whether a user is willing to use a system (Venkatesh and Davis 2000). Perceived value positively correlates with customer intention (Shank 2002). Behavioral intentions are primarily affected by conditional value (Pura 2005). Therefore, conditional value affects user satisfaction. According to DeLone and McLean (1992), IS success means that a very positive experience in using a system will be transformed into a perception of usefulness. Frequently, functional value is associated with superiority compared with alternative (Sheth et al. 1991). In the electronic service context, self-service is typically
assumed to be better than interpersonal service options because they save time and money (Meuter, Ostrom, Roundtree and Bitner 2000). Functional value which defined as “utility derived from the perceived quality and expected performance of the product or service” has a direct effect on behavioral intention (Wang, Lo, Chi, and Yang 2004). Therefore, functional value affects behavioral intentions positively. Additionality, social value is positively correlated with the intention to use, which compulsory norm affords user legitimacy in using the system. Users can obtain a self-motivation when using the system (Thaler 1985). Since social value is a symbolic meaning associated with perceived value coming from the benefits accrued by user when using the IS, social value will affect user intention to use IS positively. Hence, we propose the following hypotheses.

H5b: Conditional value positively affects user’s intention to use IS.
H6b: Functional value positively affects user’s intention to use IS.
H7b: Social value positively affects user’s intention to use IS.

Figure 1 illustrates the research framework of this study.

**Figure 1: The Measurement Model of IS Usage Behavior**

**Measurement and Data Collection**
The Freedom of Information Act was implemented by the British government in January 2005, thereby legislating the right to access government information and requiring public authorities to publish and disseminate information in accordance with “publication schemes.” This Act dictates that all authorities organize and store their records and archives in compliance a Code of Practice, which focuses the practices used to gather, manage, and destroy records (Blake 2005). The Taiwanese government promulgates the Archives Act in December 1999 to establish the legal foundation and technology standards necessary for managing government records and archives, as well as establishing the NAA in November 2001, the supreme governing body charged with educating, promoting and advancing the use of ERMS among government agencies at all levels. For improved administrative efficiency and service quality, the NAA reveals a “Ten-Year Strategic Plan” in 2002 to convey its goals
towards digitalizing government documents and records. Therefore, this study uses an ERMS as the target IS in e-government.

Base on the proposed research framework, specific constructs were examined and then operationalized using relevant measures obtained from previous research. Particularly, this study evaluates system quality, information quality, service quality, normative pressure, user satisfaction and intention using items adopted from studies by DeLone and McLean (2003) and Venkatesh and Davis (2000). In government, IS users must follow rules and laws instead of epistemic values. Moreover, users in government must use IS rationally without attaching emotional value to the IS. Perceived values are measured by items adopted from the work of Sheth, Newman and Gross (1991), i.e., conditional, functional, and social value constructs. These items pertain to common problems regarding user value and ERMS usage in government. Five domain experts reviewed a preliminary questionnaire and provided analytical feedback. These experts were IS managers in government agencies and NAA managers highly knowledgeable regarding electronic record management practices. Based on assessments and suggestions, several changes were made to item wording, fine-tuning the language to reach out to the target agencies and employees. Survey layout was redesigned to improve its visual appeal. A pilot study was then conducted to assess the survey instrument using key personnel from 10 government agencies. The top three levels of central governments, i.e. Yuan, ministry and bureau level, and top two levels of local governments, i.e. county and town level, were included as sample.

In total, 1,700 government agencies were mailed the questionnaire packets in July of 2006. The survey packet consisted of a cover letter describing study objectives and the data management plan, a support letter from the NAA, and the questionnaire. Completed questionnaires with signatures of chief officers in an agency were collected through the official reporting channel and website. In total, 360 central agencies completed the survey, for an effective response rate of 21.8%. The survey targeted staffs in charge of managing electronic records who understand the implementation and current practice of ERMS in their agency.

**Modeling Results and Analysis**

**Measurement Model**

Construct validity is assessed by examining the evidence associated with each construct, including appropriate items with loading of minimum 0.4 on their respective hypothesized components in confirmatory factor analysis (CFA) (Anderson and Gerbing 1988). The loadings on hypothesized factors are significant and substantial (all factor loadings exceeding 0.5). The assessment of convergent validity is supported by the CFA model. All loadings in Table 1 are significant (p < 0.05). Thus, convergent validity holds. Additionally, this study also computes average variance extracted (AVE) to confirm discriminate validity (Fornell and Larcker 1981). When the AVE value is larger than the square phi-correlation, the questionnaire has the high discriminate validity (Burton, Lichtenstein, Netemeyer and Garretson 1998; Batra and Sinha 2000). The AVE values are as follows: system quality, 0.50; information quality, 0.92; service quality, 0.87; normative pressure, 0.80; conditional value, 0.87; social value, 0.41; and, functional value, 0.37. Moreover, the measure of user satisfaction is 0.59 and intention to use is 0.81. The AVE values for every variable exceed the square phi-correlation demonstrating that this study has discriminate validity.

This study first determined the quality of measurement efforts by investigating reliability,
convergent validity, discriminate validity and construct validity. This study also assesses reliability for all items in a construct by calculating composite reliability (CR). Composite reliability is computed as follows: 

\[
\text{CR} = \frac{\text{sum of standardized loading}^2}{\text{sum of standardized loading}^2 + \text{sum of measurement error}}.
\]

All composite reliability values in this study are larger than 0.50, indicating an acceptable fit to data (Fornell and Larcker 1981). This result shows that this study has good reliability. The internal consistency reliabilities are as follows: system quality, 0.67; information quality, 0.96; service quality, 0.93; normative pressure, 0.89; conditional value, 0.93; functional value, 0.64; social value, 0.58; user satisfaction, 0.74; and, intention to use, 0.90.

<table>
<thead>
<tr>
<th>Construct Items</th>
<th>Loadings</th>
<th>CR</th>
<th>AVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Quality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The ERMS system is reliable</td>
<td>0.64</td>
<td>0.50</td>
<td></td>
</tr>
<tr>
<td>The output of ERMS is reliable</td>
<td>0.77</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information Quality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The output reports of ERMS are important to my job</td>
<td>0.94</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The output information of ERMS is relevant to my job</td>
<td>0.98</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service Quality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IS staff helps me realize the benefit of ERMS</td>
<td>0.93</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IS staff helps me demonstrate the results of ERMS</td>
<td>0.94</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normative Pressure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>People who influence my behavior think that I should use ERMS</td>
<td>0.88</td>
<td></td>
<td></td>
</tr>
<tr>
<td>People who are important to me think that I should use ERMS</td>
<td>0.91</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conditional Value</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERMS users get high prestige from others</td>
<td>0.92</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERMS users are regarded as capable personnel</td>
<td>0.95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Functional Value</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERMS can present the contents of records and attachments</td>
<td>0.52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERMS can provide reports for electronic records management</td>
<td>0.62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERMS can improve the operation efficiency of electronic records</td>
<td>0.68</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Value</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using ERMS makes government meet the rules of the Archives Act</td>
<td>0.59</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using ERMS fulfills the requirements of upper-level government</td>
<td>0.68</td>
<td></td>
<td></td>
</tr>
<tr>
<td>User satisfaction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am satisfied with ERMS</td>
<td>0.64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am satisfied with electronic records checking system</td>
<td>0.88</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intention to Use</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am very familiar with ERMS operations</td>
<td>0.90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I like to use ERMS</td>
<td>0.90</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The hypotheses testing result of the given model in Table 2 indicates that most relationships among latent constructs significantly support the hypotheses, thus providing initial evidence for the conceptual models in this study and supporting monological construct validity. System quality is an antecedent of conditional value (H1: \( \gamma = 0.41 \)). Additionally, information quality and service quality significantly affect functional value (H2, \( \gamma = 0.19 \); H3, \( \gamma = 0.82 \)). Normative pressure positively influences social value (H4: \( \gamma = 0.38 \)). Conditional value significantly affects user satisfaction (H5a: \( \beta = 0.14 \)) and does not significantly affect intention to use (H5b: \( \beta = 0.03 \)). Functional value positively influences user satisfaction and intention to use (H6a, \( \beta = 0.48 \); H6b, \( \beta = 0.53 \)). Social value positively influences user satisfaction and
intention to use ($H7a, \beta = 0.13; H7b, \beta = 0.35$).

### Table 2: Results of Hypotheses Testing of the Measurement Model

<table>
<thead>
<tr>
<th>Hypothesized Path</th>
<th>Estimated Coefficient</th>
<th>t-value</th>
<th>p-value</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>$H1$: System Quality $\rightarrow$ Conditional Value</td>
<td>0.41</td>
<td>7.15</td>
<td>0.001**</td>
<td>Supported</td>
</tr>
<tr>
<td>$H2$: Information Quality $\rightarrow$ Functional Value</td>
<td>0.19</td>
<td>4.00</td>
<td>0.001**</td>
<td>Supported</td>
</tr>
<tr>
<td>$H3$: Service Quality $\rightarrow$ Functional Value</td>
<td>0.82</td>
<td>11.36</td>
<td>0.001**</td>
<td>Supported</td>
</tr>
<tr>
<td>$H4$: Normative Pressure $\rightarrow$ Social Value</td>
<td>0.38</td>
<td>4.82</td>
<td>0.001**</td>
<td>Supported</td>
</tr>
<tr>
<td>$H5a$: Conditional Value $\rightarrow$ User satisfaction</td>
<td>0.14</td>
<td>2.36</td>
<td>0.099**</td>
<td>Supported</td>
</tr>
<tr>
<td>$H5b$: Conditional Value $\rightarrow$ Intention to Use</td>
<td>0.03</td>
<td>0.70</td>
<td>0.270</td>
<td>Not Significant</td>
</tr>
<tr>
<td>$H6a$: Functional Value $\rightarrow$ User satisfaction</td>
<td>0.48</td>
<td>5.77</td>
<td>0.001**</td>
<td>Supported</td>
</tr>
<tr>
<td>$H6b$: Functional Value $\rightarrow$ Intention to Use</td>
<td>0.67</td>
<td>10.66</td>
<td>0.001**</td>
<td>Supported</td>
</tr>
<tr>
<td>$H7a$: Social Value $\rightarrow$ User satisfaction</td>
<td>0.13</td>
<td>1.91</td>
<td>0.039*</td>
<td>Supported</td>
</tr>
<tr>
<td>$H7b$: Social Value $\rightarrow$ Intention to Use</td>
<td>0.35</td>
<td>5.44</td>
<td>0.001**</td>
<td>Supported</td>
</tr>
</tbody>
</table>

Note: *: $p < 0.05$, **: $p < 0.01$

The measurement model yields the following fit statistics: comparative fit index (CFI), 0.97; normed fit index (NFI), 0.96; non-normed fit index (NNFI), 0.96; goodness-of-fit index (GFI), 0.88; and, adjusted goodness-of-fit index (AGFI), 0.84. Although goodness-of-fit is not perfect, at 0.9 it is still within the acceptable range (Jöreskog and Sörbom 1984). Root mean square error of approximation (RMSEA) is 0.079 and $\chi^2/df = 3.27$, indicating that the hypothesized measurement model fits data reasonably well.

Quality of the IS and normative pressure positively and significantly influence user consumption values. User consumption values affect their level of satisfaction significantly. Intension to use is impacted by functional and social value rather than conditional value. User satisfaction does not affect his intention to use IS in e-government. The most crucial contextual factor is service quality, which affects functional value and, therefore, strongly impacts user satisfaction and intention to use.

**Rival Model**

The service marketing literature indicates that perceived satisfaction strongly impacts consumer intention (Shank 2002). Behavioral intentions are strongly influenced by satisfaction with office-related performance factors in a retail context (Van Birgelen, De Jong and De Ruyter 2006). Research investigating consumer satisfaction-behavioral consequence frameworks produced a substantive body of evidence regarding the direct effects of customer satisfaction on behavioral intentions (Cronin, Brady and Hult 2000; Seiders, Voss, Grewal and Godfrey 2005). The theoretical rationale for model, frequently left implicit in the literature, can be derived using Bagozzi’s (1992) appraisal-emotional response-coping framework. His framework proposes that customer perceptions (i.e., appraisals) trigger customer satisfaction (i.e., affective response), which in turn stimulates the development of future favorable behavioral intentions, often directed at maintaining satisfaction levels. Moreover, given the relatively high degree of perceived risk associated with services, post-evaluation of an actual experience is transformed into an important antecedent of consecutive behavior (Bennett, Hartel and McColl-Kennedy 2005). Via increased value, a ‘lock-in’ effect can occur through which satisfied customer will intend to use an IS for future transactions.
Hence, hypothesis H8—*User satisfaction positively affects user’s intention to use IS*—is added in the rival model.

The rival model produces the following fit statistics: CFI, 0.97; NFI, 0.96; NNFI, 0.96; GFI, 0.88; and, AGFI, 0.84. The RMSEA is 0.080 and $\chi^2 / df = 3.29$, implying that the rival model fits the data well (Figure 2). The alternative rival model suggests no direct path exists between satisfaction and intention to use. The hypothesized model is compared with the rival model using overall fit, GFI, AGFI, CFI, and NFI for each model’s parameters that are statistically significant. The criteria of the rival model are inferior to those of measurement model. Additionally, the ratio of the number of significant paths in the rival model (9 of 11) is lower than that of the proposed model (9 of 10).

![Figure 2: The Rival Model](image)

**Analysis**

In addition to the constructs of perceived quality, satisfaction and behavioral intention, perceived values were added to determine the relationship between perceived quality and normative pressure along with perceived values to identify the direct and indirect effects on consumer reactions to satisfaction and intention to use in e-government. This study identifies the important attributes/cues in governmental IS settings, which may be utilized to review characteristics of IS context and usage as experienced by governmental users. The context-value-behavior model of this study for IS in e-government is adapted from the IS success model developed by DeLone and McLean (2003) and consumption value proposed by Sheth, Newman and Gross (1991).

Through the research finding, perceived value indeed acts as the mediating effect between context outcomes and IS user’s behavior. Based on the concept of positive reinforcement, behavior is affected by outcomes (Robbins 2003). Additionally, performance outcome is the former concept of customer value (Hsu 2006). Therefore, the customer value influences IS users’ behaviors. From the analytical results, user satisfaction to IS in government is affected by conditional value, functional value, and social value. The intention to use IS is affected by functional value and social value rather than conditional value. The proposed modified model of the IS success in e-government context with normative pressure and value factors added is more elaborate than the original one, suggesting that in the government context, the context-
value-behavior model proposed by this study is acceptable for IS in e-government. Notably, research findings suggest that intention in government is significantly affected by functional value and normative pressure rather than satisfaction from the comparison between measurement model and rival model proposed by this study. This result differs from that obtained by Shank (2002) and Toelle (2006) in a business environment which argues satisfaction has a direct impact on consumer’s intent to do some things, implying that in the government context the role of satisfaction differs from the conventional business context of user behavior.

User satisfaction and intention to use IS in government is affected primarily from functional value in terms of information quality and service quality. This finding is similar to that obtained by Sheth et al. (1991), who argues that economically rational behavior is generally analogous to behavior motivated by functional value. This finding is similar to those obtained by other studies in that information quality has a stronger relationship with customer satisfaction than the system quality itself (Hsu 2006). Comparing with the coefficients of the paths in the research model, service quality is the most important factor which strongly influences functional value and thereby significantly influence user satisfaction and intention to use IS. Executives of the agencies could improve the service quality to IS users for high functional value, user satisfaction, and intention to use in government.

Based on the theory of planned behavior, consumer intentions can be predicted based on his attitudes that can further be predicted using normative pressure (Tarkiainen and Sundqvist 2005). Normative pressure is higher in government settings than in business context. The intention to use IS is affected significantly by normative pressure through the mediating of social value. Although system quality significantly affects conditional value, conditional value does not affect intention to use IS in government. Governmental users have to use IS under normative pressure in spite of their conditional value measured by prestige and capability image. However, Venkatesh and Davis (2000) considered an extension of technology acceptance model which focuses on antecedents of perceived usefulness, including concepts of social influence process (such as subjective norm and image) and cognitive instrumental process. Since image is important to users’ perception of the social context and attitudes to IS, image could be driving force behind consumer intentions to use IS.

**Concluding Remarks**

The work that we propose has long-range implications. The ability to form representations of perceived value that can be flexibly activated, depending upon context, is a fundamental aspect of human intention and behavior. It's important to note that context can be established and maintained by government officers and information staffs. By combining D&M IS success model and consumption value approaches, we hope to shed light on the mechanisms underlying a form of positive reinforcement in which contexts dictate how perceived values predict behavior. Our work might also lead to more general principles that can advance understanding of perceived values for which context is important. In particular, our framework explains how context, when combined with users’ perceived value, can affect users’ behavior in a variety of government agencies.

Perceived value plays a mediating role between context and users’ behavior. The intention to use IS is affected by functional value and social value rather than conditional value. More contextual factors, e.g. relationship network, influencing users’ social value and functional value could be added into future research such that influence path from operating context
through perceived value to behavior will be well understood. In terms of path coefficients, this study encourages highly support of IS staffs to users for better service quality to IS success in e-government owing to their lack of IS proficiency.

“Normative pressure” is recommended to be added as an important dimension of IS success in the e-government environment where regulations is crucial. In e-government, all agencies must provide a catalog of their records and archives with a prespecified data format on website periodically. Normative pressure is higher in government settings than that in business context. Regulatory compliance is often the reason for intensive IS use in e-government. Comparing the measurement model with rival model of this study, the intention to use IS is not significantly affected by user satisfaction in e-government context under the existence of normative pressure or regulation. In the aggregate, this framework depicts detailed relationship and projects better estimates of IS success in e-government. In the specific, it can help government officers tailor computerization context to enhance users’ satisfaction and intention to use IS in e-government. Future studies could include more latent measurements, e.g. image and job relevance, to address the casual relationships between perceived values.

References


