

# 政府機關資訊系統知覺價值與使用之 關係

## Exploring Perceived Value and Usage of Information Systems in Government Context

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**摘要：**政府機關與私人企業不同，因此其資訊系統之使用行為將有所差異。本研究探討政府機關中的資訊系統情境到使用者行為之間的因果關係，透過實務調查，瞭解主觀規範、知覺品質、知覺價值、滿意度與使用資訊系統意圖之間的關係。研究結果顯示政府機關資訊系統之使用意圖顯著地受到使用

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者之社會價值與功能價值的影響，而不受情境價值的影響。不同於一般企業環境，政府機關資訊系統使用者的使用意圖並不受其滿意度的影響。

**關鍵詞：**知覺價值；主觀規範；資訊系統成功；政府

**Abstract:** The usage of information systems in government agencies is different to that in business. This study investigates the causal relationship of information systems (IS) usage from IS context to user's behavior in government settings. Through empirical survey, the relationship among subjective norm, perceived quality, perceived value, satisfaction and intention to use IS in government was examined. 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. It is interesting to find that in government, in contrast to the business environment, users' intention to use IS does not count on their satisfaction.

**Keywords:** Perceived value, Subjective norm, IS success, Government

## 1. Introduction

The effect of subjective norm, quality and perceived value on behavioral intention to use information systems (IS) in government agencies was examined. Intention to use IS is a function of user's quality perceptions of the system, information and services (DeLone and McLean, 2003). Perceived value is increasingly recognized as essential to intention in research. User behavior is positively correlated with his/her perception of value (Sheth, Newman and Gross, 1991). In order to develop superior online services, government agencies must understand the factors and path that influence user adoption of IS (Carter and Belanger, 2005). Recent advances in consumer and services marketing consider that perceived value and satisfaction are central to explaining customer loyalty (Fiol, Tena, and García, 2011). However, no study has characterized the relationships among IS context, users' internal value and behavioral intention to

use IS in government. This study tries to make a contribution to the research area of IS usage in government through the mediating of perceived value.

Perceived value comes from performance outcome and reflects on customer behavior in IS context (Hsu, 2006; Hsu, Chen, and Wang, 2010). Behavior is motivated by perceived values (Holbrook, 1994; Shukla, 2010). The value framework developed by Sheth, Newman, and Gross (1991) explains why consumers make choices based on their perceived values. 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). Past use is the most important predictor of intention to use and future use, and its impacts increase as past usage increases (Kim and Malhotra, 2005). Perception of quality has effects on desirable outcomes such as consumer intent to recommend a service. Besides, performance has an indirect effect on behavior mediated by consumer-perceived value (Venkatesh and Dawis, 2000). Bagozzi's framework described self-regulating processes in terms of emotional response to behavior with various outcomes (Chang, Wang and Yang, 2009). Perceived sacrifice, perceived service quality, and perceived value from the context of service environment affect the consumers' behavioral intentions (Shukla, 2010). This study proposed a context-value-behavior approach by adding perceived value to the context construct and specific behavior of satisfaction and intention to use IS in government. This study tries to underline the relationship in which contexts affect perceived value and subsequent behavior.

The intention to use IS in government will be different than that in business. Value within business markets is often perceived as the monetary price or net worth of the costs and benefits that are associated with a particular exchange (Stewart, 2006). However money or profit is not the major concern in government. Electronic government is no longer merely an option but has become a necessity (Gupta and Jana, 2003). In the e-government context, government agencies have to use IS. 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 system quality and information quality influence use status and user satisfaction with respect to the IS,

use status and user satisfaction then influence user's behavior, and, in turn, affect organizational performance (DeLone and McLean, 1992). User value is an antecedent judgment of usage. Therefore, the antecedents of usage can then be further deconstructed into different perceived values. They are mediating effects between context and user's behavior. Once the context-value-behavior framework is approved by government setting, the relationship which contextual factors influence users' perceived values and values influence user's behavior will be understood.

## **2. Literature Review and Hypotheses**

From the perspective of technology acceptance model (TAM), subjective norm influences behavioral intention (Venkatesh and Davis, 2000). Institutional theory argues that stakeholders impose subjective norms on firms, including government agencies (Delmas and Toffel, 2004). Subjective norm is based on political support for stringent regulations and regulatory threats that impede operations based on operational performance. 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 people do not favor performing a given behavior, if they believe that important reference person believe that they should perform this behavior, then they will likely perform such a behavior (Ho and Yang, 2009). Due to the characteristics of government, regulations based on rules and laws are important to IS operations in government agencies. Therefore, subjective norm that regulates behavior of government IS users is included in this study.

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 user's intention to use IS (DeLone and McLean, 2003).

Perceived value comes from performance outcome and reflects user's behavior. 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." Perceived value is a customer's 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, 1997). This definition links the perceived value of customer 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, 1997). Behavioral intentions represent various consumer responses such as intention to use a product or service. 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. User satisfaction and IS usage reflect individual behavior (DeLone and McLean, 1992). Thus, from the TAM and IS success model, this study takes subjective norm, system quality, information quality and service quality as antecedents of perceived value to examine user satisfaction and intention to use IS in government.

Sheth, Newman and Gross (1991) explained why consumers make choices based on consumption value and identifies the following five consumption values that influence consumer behavior: functional, 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 value underscores purchase attitudes and behaviors. As government is a relatively stable entity, epistemic value and emotional value are not appropriate in government settings. The influence of epistemic value on commitment is not significant (Pura, 2005). Therefore, this study uses conditional value, functional value and social value as constructs of value in analyzing the intention to use IS in a government context.

Several hypotheses were proposed in this study. Subjective norm means that a potential decision maker recognizes a need for making decisions and is influenced by individualism (Hartwick and Barki, 1994). Since subjective norm 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. Consumers with a high degree of value congruence within an organization appear to be more willing to share information (Cazier, Shao, and St Louis, 2007). Social value comes from the association of the product with the social group (Pope, 1998) and is the perceived utility obtained from an alternative's association with one or more particular social groups (Sheth, Newman and Gross, 1991). Social value enforces particular behaviors and rewards or punishes these behaviors (Sweeney, Soutar, and Johnson, 1999). Subjective norm is positively associated with social value. 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 value and specific symbolic meanings that satisfy self-valued performance. Value of an excellent governmental leader will have a significant effect on surrounding people and form the extent of social value. Subjective norm positively affects the social value of customers (Hsu, Chen, and Wang, 2010). Since operations of electronic records management systems (ERMS) are regulated by the Archives Act in Taiwan, government agencies are influenced by the requirements of upper-level ones or regulating agency called the National Archives Administration (NAA). Thus, we propose the following hypothesis.

***H1: Subjective norm is positively related to social value.***

Information quality, namely the quality of information offered by systems, includes measures of IS outputs primarily in the form of reports (DeLone and McLean, 1992). A semantic instrument for information quality had measures of relevance, accuracy, timeliness, aggregation, and formatting (Ahituv, 1980). The functional value of an alternative represents the utility it is perceived to possess on criteria salient to its utilitarian or physical purposes (Sheth, Newman and Gross, 1991). Information quality positively affects perceived value in the electronic context (Wang, 2008). The relevance of information to user's task or problem will render the perceived functional value. The matches between outputs of an IS and user's requirement affect the 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. Therefore, information quality positively affects functional value. 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 is positively related to functional value.***

In IS context, service quality is essential to its success (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). Value is an interactive experience (Woodruff, 1997). Service quality positively affects perceived value in the electronic context (Wang, 2008). Functional value comes from the effectiveness, practicality or utility of the product or service (Pope, 1998). Service performance directly affects customer value (Venkatesh and Dawis, 2000). Service quality significantly influenced functional dimension of perceived value (Chen and Hu, 2010; Wang, Wu, and Fu, 2010). Service quality of information providers significantly affects

the functional value concept of information recipients. Hence, we propose the following hypothesis.

***H3: Service quality is positively related to functional value.***

System quality comes from the information processing system itself (DeLone and McLean, 1992). User interface, response time, reliability, and system flexibility are parts of a scheme for measuring system quality (Hamilton and Chervany, 1981). System quality positively affects perceived value in the electronic context (Wang, 2008). 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). Conditional value comes from the worth attached to when or how customers use the product (Pope, 1998). An alternative's utility often depends on the situation (Sheth, Newman and Gross, 1991). Holbrook (1994) proposed that conditional value depends on the context in which a 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 (Venkatesh and Dawis, 2000). 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, we propose the following hypothesis.

***H4: System quality is positively related to conditional value.***

Specific behavior would be enforced by social value (Sweeney, Soutar, and Johnson, 1999). Social value is expected to have great influence on the use of services, as they are often used in a social environment that involves interpersonal influence (Sullivan Mort and Drennan, 2005). People's psychogenic needs are based on psychological tensions and influenced by social relations and the like. Social satisfaction comes from user's symbolic self-satisfaction and self-hint



consumption. User satisfaction has been suggested as a success measure for empirical IS researches (Hamilton and Chervany, 1981). IS user satisfaction includes measures of recipient response to the use of the output of IS (DeLone and McLean, 1992). Perceived value positively relates to customers' satisfaction (Wang, 2008). Social value has critical influence on customer's satisfaction (Fiol *et al.*, 2009). Owing to IS usage being recognized as worthy of the user's social identity and status by others, increase in user's perceived social value will enhance his/her satisfaction. Hence, we propose the following hypothesis.

***H5a: Social value is positively related to user satisfaction.***

User's willingness about IS reflects on his/her intention to use system (Venkatesh and Davis, 2000). Social value is important in human relationship (Fiol, Tena, and García, 2011). The phenomenon of reference group influence is clearly germane to consumer behavior. Perceived value has positive impacts on behavioral intention (Hu, Kandampully, and Juwaheer, 2009; Hume and Sullivan Mort, 2010). IS users' perceived value positively relates to their intention to use (Hung, Tsang, and Liu, 2010). Social value is positively correlated with the intention to use IS, in which compulsory norms afford user legitimacy in using the system. Users in this situation can obtain a self-motivation to use the system (Thaler, 1985). Perceived value positively affects user's intention to reuse IS (Wang, 2008). With regard to consumer durables, an ERMS user in a government agency may probably spend more effort in accomplishing records management in a computer system to appeal to his/her colleagues and the upper classes in general. Since social value has a kind of symbolic meaning of perceived value that comes from the benefit for the user in using the IS, it will affect the user's intention to use IS positively. There is a positive relationship between social value and intentions (Pihlström and Brush, 2008). Hence, we propose the following hypothesis.

***H5b: Social value is positively related to user's intention to use IS.***

Functional value refers to the satisfaction derived from the physical performing of its functions of product (Sheth, Newman and Gross, 1991).

Perception of benefit occurs as a result of the relevance of technology to user's specific needs. The convenience of IS, as functional value, also enhances user satisfaction. Economic satisfaction is to satisfy specific needs, solve specific problems, and produce user satisfaction. Additionally, the high-level affective value associated with an information product will support the emotional and subjective needs of a user, thereby generating user satisfaction. This satisfaction is a kind of non-economic psychological satisfaction (Geyskens, Steenkamp, and Kumar, 1999). Quality of IS is closely associated with the satisfaction of users (Pitt, Watson, and Kavan, 1995). It is not all for use functions of the IS, but for the IS to bring a symbolic meaning to information users. Perception of functional value brings the satisfaction of using IS in government. Functional value contributes to generate customer satisfaction (Deng *et al.*, 2010). Hence, we propose the following hypothesis.

***H6a: Functional value is positively related to user satisfaction.***

Effective task fulfillment drives the perceived functional value which relates to superiority compared with alternatives (Sheth, Newman and Gross, 1991; Pura, 2005). Perceived value positively affects user's intention to reuse IS (Wang, 2008). Functional value that generally relates to such attributes as performance will influence user's behavior and intention to use IS. Utility theory posits that reacting behavior will be the one that maximizes utility (Sheth, Newman and Gross, 1991). Users like to use the system with functions that they can easily manipulate. The professionalism of IS department influences the individual IT adoption in an organization. Functional value, defined as utility derived from the perceived quality and expected performance of the product or service, has a direct effect on behavioral intention (Wang *et al.*, 2004). Functional value positively affects user's intention to use IS (Hsu, Chen, and Wang, 2010). Hence, we propose the following hypothesis.

***H6b: Functional value is positively related to user's intention to use IS.***

Conditional value denotes the value derived from the independence of time and place and is experienced only in certain contexts or situations (Holbrook,

1994). When a choice is driven by conditional value, the outcome is contingent on antecedent circumstances that may cause the consumers to deviate from their typical or planned behavior (Sheth, Newman and Gross, 1991). Perceived value positively affects user's satisfaction to IS (Wang, 2008). The perception of users compares the difference between expected compensation and input costs (Churchill and Surprenant, 1982). The conditions that might cause users to switch IS usage, i.e. conditional value, will support the subjective needs of a user. Ubiquity condition increases importance of IS services (Pura, 2005; Nysveen, Pedersen and Thorbjornsen, 2005). Therefore, conditional value affects a user's satisfaction. Hence, we propose the following hypothesis.

***H7a: Conditional value is positively related to user satisfaction.***

Perceived value positively affects user's intention to reuse IS (Wang, 2008). Conditional value often influences the choice makers to deviate from their patterns of behavior. Conditional value refers to circumstances which impact choice and intention (Sheth, Newman and Gross, 1991). In government agencies, traditional records management neglected the core activity and was ignored for a long time. A good image of personnel using IS as a capable one in government agencies can greatly enhance the intention of records staff to use ERMS. Thus, conditional value affects behavioral intentions of customers. Hence, we propose the following hypothesis.

***H7b: Conditional value is positively related to user's intention to use IS.***

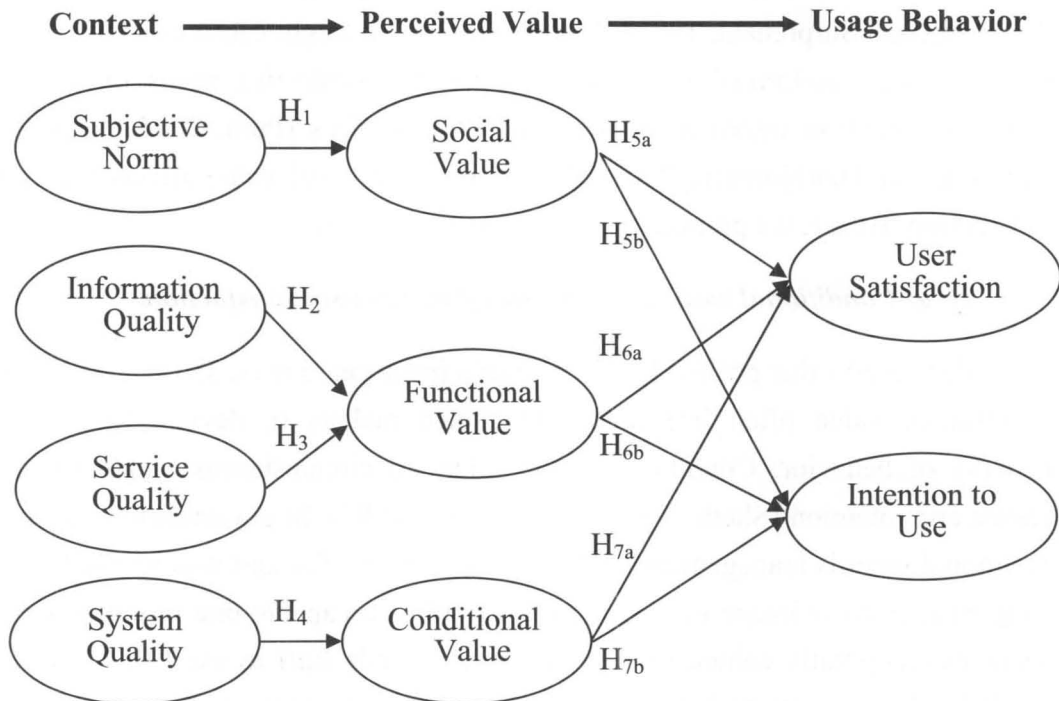
Figure 1 illustrates the research framework of this study.

### **3. Measurement and Data Collection**

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

**Figure 1**  
**The Initial Model**



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 to utilize ERMS for processing official records and archives. According to the global e-government report investigated by the Center for Public Policy of Brown University, Taiwanese e-government ranks 1st, 1st, and 2nd in 2004, 2005, and 2006 respectively (West, 2006). Therefore, this study uses an ERMS as the target IS in e-government. From 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 catalogs to the 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.

Through the proposed model, specific constructs were examined and then operationalized using relevant measures obtained from previous researches. Particularly, this study evaluates system quality, information quality, service quality, subjective norm, 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 value. Moreover, users in government must use IS rationally without attaching emotional value to the IS. Perceived value is 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.

All questionnaire items were obtained from previous studies and modified for this study (Sheth, Newman and Gross, 1991; Venkatesh and Davis, 2000). In total, 19 indicators for nine constructs in this study were assessed using a modified 7-point Likert-type scale without the middle point, ranging from 6 for the most positive evaluation and 1 as the most negative evaluation. The performance criterion was adopted by concept of TAM proposed by Venkatesh and Davis (2000). Additionally, perceived value is measured by items adopted from the work of Sheth, Newman and Gross (1991), i.e., social, functional, and conditional value constructs. In this paper, we employ the perceived value and technology acceptance standard to conduct evaluation of IS user's behavior. 1) Subjective norm, containing two indicators: obligation and compliance. 2) Information quality, containing two indicators: importance and relevance of reports. 3) Service quality, containing two indicators: benefit and demonstration of help. 4) System quality, containing two indicators: reliability and friendliness. 5) Social value, containing two indicators: regulation fulfillment and supervision attainment. 6) Functional value, containing three indicators: content completeness,

report sufficiency, and operation efficiency. 7) Conditional value, containing two indicators: prestige and capability perception. 8) User satisfaction, containing two indicators: satisfaction of ERMS and auditing system. 9) Intention to Use, containing two indicators: usage frequency and reuse tendency. These items pertain to common problems regarding user's perception of value and ERMS usage in government context.

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.

Questionnaire packets were mailed to 1,700 government agencies. 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. 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.

## **4. Modeling Results and Discussion**

### **4.1 Initial 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 initial 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 model fits data reasonably well. The situations, GFI and AGFI are greater than 0.8 and RMSEA is less than 0.08, make the reasonable fitness of research model.

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: subjective norm, 0.80; information quality, 0.92; service quality, 0.87; system quality, 0.50; social value, 0.41; functional value, 0.37; and conditional value, 0.87. Moreover, the measure of user satisfaction is 0.59 and intention to use is 0.81. The AVE values for every variable demonstrate that this study has discriminate validity.

The quality of measurement efforts by investigating reliability, convergent validity, discriminate validity and construct validity were also determined. This study assesses reliability for all items in a construct by calculating composite reliability (CR). 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: subjective norm, 0.89; information quality, 0.96; service quality, 0.93; system quality, 0.67; social value, 0.58; functional value, 0.64; conditional value, 0.93; user satisfaction, 0.74; and intention to use, 0.90.

**Table 1**  
**Confirmatory Factor Analysis**

| <b>Construct and Measurement Items</b>                          | <b>Loadings</b> |
|---|-----------------|
| Subjective Norm   |                 |
| People who influence my behavior think that I should use ERMS   | 0.88            |
| People who are important to me think that I should use ERMS     | 0.91            |
| Information Quality   |                 |
| The output reports of ERMS are important to my job              | 0.94            |
| The output information of ERMS is relevant to my job            | 0.98            |
| Service Quality   |                 |
| IS staff helps me realize the benefit of ERMS                   | 0.93            |
| IS staff helps me demonstrate the results of ERMS               | 0.94            |
| System Quality  |                 |
| The ERMS system is reliable                                     | 0.64            |
| The interface of ERMS is friendly                               | 0.77            |
| Social Value  |                 |
| Using ERMS fulfills the requirements of the National Archives   | 0.59            |
| Using ERMS fulfills the requirements of upper-level government  | 0.68            |
| Functional Value  |                 |
| ERMS can present the contents of records and attachments        | 0.52            |
| ERMS can provide reports for electronic records management      | 0.62            |
| ERMS can improve the operation efficiency of electronic records | 0.68            |
| Conditional Value   |                 |
| Getting high prestige from others would cause me to use ERMS    | 0.92            |
| Regarding as a capable user would cause me to use ERMS          | 0.95            |
| User satisfaction   |                 |
| I am satisfied with ERMS  | 0.64            |
| I am satisfied with auditing system for electronic records      | 0.88            |
| Intention to Use  |                 |
| I plan to use ERMS in the next month                            | 0.90            |
| Assuming I can access to ERMS, I intend to use it               | 0.90            |

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 mono-logical construct validity. Subjective norm is an antecedent of social value (H1:  $\gamma=0.38$ ). Additionally, information quality and service quality significantly affect functional value (H2,  $\gamma=0.19$ ; H3,  $\gamma=0.82$ ). System quality positively influences conditional value (H4:  $\gamma=0.41$ ). Social value positively influences user satisfaction and intention to use (H5a,  $\beta=0.13$ ; H5b,  $\beta=0.35$ ).



Functional value positively influences user satisfaction and intention to use (H6a,  $\beta=0.48$ ; H6b,  $\beta=0.67$ ). Conditional value significantly affects user satisfaction (H7a:  $\beta=0.14$ ) and does not significantly affect intention to use (H7b:  $\beta=0.03$ ).

**Table 2**  
**Results of Hypotheses Testing of the Initial Model**

| Hypothesized Path                                       | Estimated Coefficient | t-value | Result          |
|---|-----------------------|---------|-----------------|
| H <sub>1</sub> : Subjective norm → Social Value         | 0.38                  | 4.82**  | Supported       |
| H <sub>2</sub> : Information Quality → Functional Value | 0.19                  | 4.00**  | Supported       |
| H <sub>3</sub> : Service Quality → Functional Value     | 0.82                  | 11.36** | Supported       |
| H <sub>4</sub> : System Quality → Conditional Value     | 0.41                  | 7.15**  | Supported       |
| H <sub>5a</sub> : Social Value → User satisfaction      | 0.13                  | 1.91*   | Supported       |
| H <sub>5b</sub> : Social Value → Intention to Use       | 0.35                  | 5.44**  | Supported       |
| H <sub>6a</sub> : Functional Value → User satisfaction  | 0.48                  | 5.77**  | Supported       |
| H <sub>6b</sub> : Functional Value → Intention to Use   | 0.67                  | 10.66** | Supported       |
| H <sub>7a</sub> : Conditional Value → User satisfaction | 0.14                  | 2.36**  | Supported       |
| H <sub>7b</sub> : Conditional Value → Intention to Use  | 0.03                  | 0.70    | Not Significant |

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

Subjective norm, information quality, service quality, and system quality positively and significantly influence the perceived value of users. Users' perceived value affects their levels of satisfaction significantly. Intention to use is impacted by functional and social value rather than conditional value. Users' satisfaction does not affect their intention to use IS in government settings. The most crucial contextual factor is service quality, which affects functional value and, therefore, strongly impacts user satisfaction and intention to use.

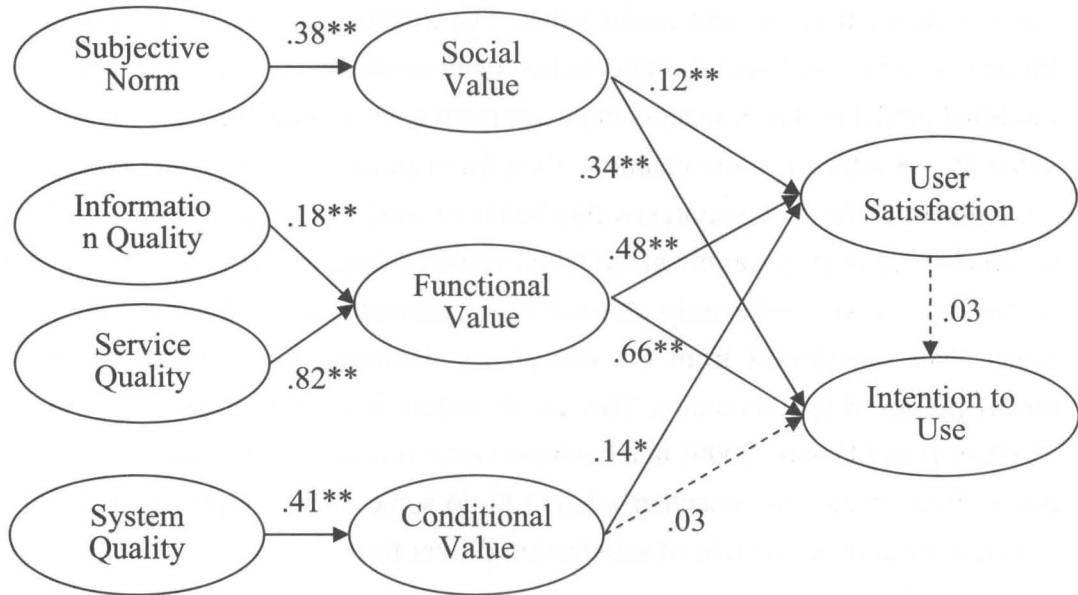
## 4.2 Rival Model

The service marketing literature indicates that perceived satisfaction strongly impacts consumer intention. 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 *et al.*, 2005). The theoretical rationale for the 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 initial 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**



### 4.3 Discussion

In addition to the constructs of perceived quality, satisfaction and behavioral intention, perceived values were added to determine the relationship between perceived quality and subjective norm along with perceived value to identify the direct and indirect effects on consumer reactions to satisfaction and intention to use in a government context. 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 government is adapted from the IS success model developed by DeLone and McLean (2003) and consumption value proposed by Sheth, Newman, and Gross (1991).

Perceived value indeed acts as the mediating effect between context outcomes and IS user's behavior from investigated findings. 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 government context with subjective norm 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 government. Notably, research findings suggest that intention in government is significantly affected by functional value and subjective norm rather than satisfaction from the comparison between initial model and rival model proposed by this study. This result differs from that obtained by Shank Venkatesh and Dawis (2000) 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). Compared 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 influences 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.

Consumer intentions can be predicted from attitudes that can further be predicted using subjective norm based on the theory of planned behavior. Subjective norm is higher in government settings than that in business contexts. The intention to use IS is affected significantly by subjective norm 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 subjective norm 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 the driving force behind consumer intentions to use IS.

## 5. Concluding Remarks

The most typical assumption of research in consumers' behavior is that they are voluntary (Brown and Venkatesh, 2005). Prior IS researches have been conducted primarily in environments of voluntary adoption, the applicability of previous findings to the mandatory usage context is unclear (Chan *et al.*, 2010). For IS usage in government, a context-value-behavior approach is proposed. Perceived value plays a mediating role between context and users' behavior. 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 staff. By combining the 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 value predicts behavior. Our work might also lead to more general principles that can advance understanding of perceived value 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.

The intention to use IS is affected by functional value and social value rather than conditional value. The functional value has the strongest influence on users' satisfaction and intention. Since users in mandatory setting have to fulfill the regulation first, they expect that IS can attain their task requirements. Therefore, the deployment of IS has to focus on the functionality than social and 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 the strong support of IS staff to users for better service quality to IS success in government owing to their lack of IS proficiency.

Subjective norm is recommended to be added as an important dimension of IS success in the e-government environment where regulations is crucial. In contrast with the business environment, it is interesting to find that users' intention to use IS does not count on their satisfaction in government settings. From e-government policy, all agencies must provide catalogs of their records and archives with a pre-specified data format through on-line delivery to NAA periodically. Subjective norm is higher in government settings than that in business context. Regulatory compliance is often the reason for intensive IS use in government. Comparing the initial model with the rival model of this study, the intention to use IS is not significantly affected by user satisfaction in government context under the existence of subjective norm or regulation. Therefore, subjective norm is a stronger factor in the government context than in business environment.

In the aggregate, this framework depicts detailed relationship and projects better estimates of IS success in government. Concerning specific contributions, findings of this study could help managers tailor their computerization context to enhance users' satisfaction and intention to use IS in government agencies. Future studies could incorporate a longitudinal measurement to address the dynamics of perceived value and behavior in IS acceptance.

## References

- Ahituv, N. (1980), "A Systematic Approach toward Assessing the Value of an Information System," *MIS Quarterly*, 4(4), 61-75.
- Anderson, J. C. and Gerbing, D. W. (1988), "Structural Equation Modeling in Practice: A Review and Recommends Two-step Approach," *Psychological Bulletin*, 103(3), 411-423.
- Bagozzi, R. P. (1992), "The Self-regulation of Attitudes, Intentions and Behavior," *Social Psychology Quarterly*, 55(2), 178-204.
- Batra, R. and Sinha, I. (2000), "Consumer-Level Factors Moderating the Success of Private Label Brands," *Journal of Retailing*, 76(2), 175-191.
- Bennett, R., Hartel, C. E. J. and McColl-Kennedy, J. R. (2005), "Experience as a Moderator of Involvement and Satisfaction on Brand Loyalty in a Business to Business Setting," *Industrial Marketing Management*, 34(1), 97-107.
- Brown, S. A. and Venkatesh, V. (2005), "Model of Adoption of Technology in Households: A Baseline Model Test and Extension Incorporating Household Life Cycle," *MIS Quarterly*, 29(3), 399-426.
- Burton, S., Lichtenstein, D. R., Netemeyer, R. G. and Garretson, J. A. (1998), "A Scale for Measuring Attitude toward Private Label Products and an Examination of Its Psychological and Behavioral Correlates," *Journal of the Academy of Marketing Science*, 26(4), 293-306.
- Carter, L. and Belanger, F. (2005), "The Utilization of E-government Services: Citizen Trust, Innovation and Acceptance Factors," *Information System Journal*, 15(1), 5-25.

- Cazier, J. A., Shao, B. B. M. and St Louis, R. D., (2007), "Sharing Information and Building Trust through Value Congruence," *Information Systems Frontiers*, 9(5), 515-529.
- Chan, F. K. Y., Thong, J. Y. L., Venkatesh, V., Brown, S. A., Hu, P. J. H. and Tam, K. Y. (2010), "Modeling Citizen Satisfaction with Mandatory Adoption of an E-Government Technology," *Journal of the Association for Information Systems*, 11(10), 519-549.
- Chang, H. H., Wang, Y. H. and Yang, W. Y., (2009), "The Impact of E-service Quality, Customer Satisfaction and Loyalty on E-marketing: Moderating Effect of Perceived Value," *Total Quality Management*, 20(4), 423-443.
- Chen, P. T. and Hu, H. H., (2010), "How Determinant Attributes of Service Quality Influence Customer-perceived Value: An Empirical Investigation of the Australian Coffee Outlet Industry," *International Journal of Contemporary Hospitality Management*, 22(4), 535-551.
- Churchill, G. A., Jr. and Surprenant, C. (1982), "An Investigation into the Determinants of Customer Satisfaction," *Journal of Marketing Research*, 19(4), 491-504.
- Cronin, J. J., Brady, M. K. and Hult, G. T. M. (2000), "Assessing the Effects of Quality, Value and Customer Satisfaction on Consumer Behavioral Intentions in Service Environments," *Journal of Retailing*, 76(2), 193-218.
- Delmas, M. and Toffel, M. W. (2004), "Stakeholders and Environmental Management Practices: An Institutional Framework," *Business Strategy and the Environment*, 13(4), 209-222.
- DeLone, W. H. and McLean, E. R. (1992), "Information Systems Success: The Quest for the Dependent Variable," *Information Systems Research*, 3(1), 60-95.



- DeLone, W. H. and McLean, E. R. (2003), "The DeLone and McLean Model of Information Systems Success: A Ten-Year Update," *Journal of Management Information Systems*, 19(4), 9-30.
- Deng, Z., Lu, Y., Wei, K. K. and Zhang, J., (2010), "Understanding Customer Satisfaction and Loyalty: An Empirical Study of Mobile Instant Messages in China," *International Journal of Information Management*, 30(4), 289-300.
- Fiol, L. J. C., Alcañiz, E. B., Tena, M. A. M. and García, J. S., (2009), "Customer Loyalty in Clusters: Perceived Value and Satisfaction as Antecedents," *Journal of Business to Business Marketing*, 16(3), 276-316.
- Fiol, L. J. C., Tena, M. A. M. and García, J. S. (2011), "Multidimensional Perspective of Perceived Value in Industrial Clusters," *The Journal of Business & Industrial Marketing*, 26(2), 132-145.
- Fishbein, M. and Ajzen, I. (1975), *Beliefs, Attitude, Intention and Behavior: An Introduction to Theory and Research*, Reading, MA: Addison-Wesley.
- Fornell, C. and Larcker, D. F. (1981), "Evaluating Structural Equation Models with Unobservable Variables and Measurement Error," *Journal of Marketing Research*, 18(1), 39-50.
- Geyskens, I., Steenkamp, J. E. M., Kumar, N. (1999), "A Meta-analysis of Satisfaction in Marketing Channel Relationships," *Journal of Marketing Research*, 36(2), 223-238.
- Gupta, M. P. and Jana, D. (2003), "E-government Evaluation: A Framework and Case Study," *Government Information Quarterly*, 20(4), 365-387.
- Hamilton, S. and Chervany, N. L. (1981), "Evaluating Information Systems Effectiveness: Part I Comparing Evaluation Approaches," *MIS Quarterly*, 5(3), 55-69.

- Hartwick, J. and Barki, H. (1994), "Explaining the Role of User Participation in Information System Use," *Management Science*, 40(4), 440-465.
- Ho, S. H. and Yang, T. Y. (2009), "Understanding Consumer Acceptance of Internet Banking-From Stayers and Switchers' Perspectives," *Chiao Da Management Review*, 29(2), 1-20.
- Holbrook, M. B. (1994), "The Nature of Customer Value: An Axiology of Services in the Consumption Experience," in Rust, R. T. and Oliver R. L., (Eds.), *Service Quality: New Directions in Theory and Practice*, (21-71), Newbury Park, CA: Sage Publication .
- Hsu, H. (2006), "An Empirical Study of Web Site Quality, Customer Value and Customer Satisfaction Based on E-Shop," *The Business Review*, 5(1), 190-193.
- Hsu, F. M., Chen, T. Y. and Wang, S. (2010), "The Role of Customer Values in Accepting Information Technologies in the Public Information Service Sector," *The Service Industries Journal*, 30(7), 1097-1111.
- Hu, H. H., Kandampully, J. and Juwaheer, T. D. (2009), "Relationships and Impacts of Service Quality, Perceived Value, Customer Satisfaction and Image: An Empirical Study," *The Service Industries Journal*, 29(2), 111-125.
- Hume, M. and Sullivan Mort, G., (2010), "The Consequence of Appraisal Emotion, Service Quality, Perceived Value and Customer Satisfaction on Repurchase Intent in the Performing Arts," *The Journal of Services Marketing*, 24(2), 170-183.
- Hung, W. T., Tsang, S. S. and Liu, H. Y. (2010), "Website Characteristics and the Impact of User Perceived Value on User Behavior in Web 2.0," *Academy of Information and Management Sciences Journal*, 13(1), 1-18.

- Lamb, R., King, J. L. and Kling, R. (2003), "Informational Environments: Organizational Contexts of Online Information Use," *Journal of the American Society for Information Science and Technology*, 54(2), 97-114.
- Jöreskog, K. D. and Sörbom, D. (1984), *Analysis of Linear Structural Relationship by Maximum Likelihood*, Chicago, IL: Scientific Press.
- Kettinger, W. J. and Lee, C. C. (1995), "Perceived Service Quality and User Satisfaction with the Information Service Function," *Decision Sciences*, 25(5), 737-765.
- Kim, S. S. and Malhotra, N. K. (2005), "Predicting System Usage from Intention and Past Use: Scale Issues in the Predictors," *Decision Sciences*, 36(1), 187-196.
- Mason, R. O. (1978), "Measuring Information Output: A Communication Systems Approach," *Information & Management*, 1(5), 219-234.
- Nysveen, H., Pedersen, P. E. and Thorbjørnsen, H. (2005), "Intentions to Use Mobile Services: Antecedents and Cross-Service Comparisons," *Journal of the Academy of Marketing Science*, 33(3), 330-346.
- Oliver, R. (1997), *Satisfaction: A Behavioral Perspective on the Consumer*, New York, NY: McGraw-Hill.
- Pihlström M. and Brush, G. J. (2008), "Comparing the Perceived Value of Information and Entertainment Mobile Services," *Psychology & Marketing*, 25(8), 732-755.
- Pitt, L. F., Watson, R. T. and Kavan, C. B. (1995), "Service Quality: A Measure of Information Systems Effectiveness," *MIS Quarterly*, 19(2), 173-188.
- Pope, N. (1998), "Consumption Values, Sponsorship Awareness, Brand and Product Use," *The Journal of Product and Brand Management*, 7(2), 124-136.

- Pura, M. (2005), "Linking Perceived Value and Loyalty in Location-based Mobile Services," *Managing Service Quality*, 15(6), 509-538.
- Robbins, S. P. (2003), *Organizational Behavior*, 10th Edition, Englewood Cliffs, NJ:Prentice-Hall.
- Seiders, K., Voss, G. B. Grewal, D. and Godfrey, A. L. (2005), "Do Satisfied Customers Buy More? Examining Moderating Influences in a Retailing Context," *Journal of Marketing*, 69(4), 26-43.
- Shannon, C. E. and Weaver, W. (1949), *The Mathematical Theory of Communication*, Urbana, IL: University of Illinois Press.
- Sheth, J. N., Newman, B. I. and Gross, B. L. (1991), "Why We Buy What We Buy: A Theory of Consumption Values," *Journal of Business Research*, 22(2), 159-170.
- Shukla, P. (2010), "Effects of Perceived Sacrifice, Quality, Value and Satisfaction on Behavioral Intentions in the Service Environment," *Services Marketing Quarterly*, 31(4), 466-484.
- Stephens, D. O. (1998), "Megatrends in Records Management," *ARMA Records Management Quarterly*, 32(1), 3-9.
- Stewart, G. T. (2006), *Relational Value Exchange: A Grounded Theory Study of Buyers' and Sellers' Approaches to Building, Maintaining and/or Dissolving Interorganizational Relationships*, Unpublished Ph.D. Dissertation, The University of Tennessee.
- Sullivan Mort, G. and Drennan, J. (2005), "Marketing M-services: Establishing a Usage Benefit Typology Related to Mobile User Characteristics," *Database Marketing & Customer Strategy Management*, 12(4), 327-341.
- Sweeney, J. C. and Soutar, G. N. (2001), "Consumer Perceived Value: The Development of a Multiple Item Scale," *Journal of Retailing*, 77(2), 203-221.

- Sweeney, J. C., Soutar, G. N. and Johnson, L.W. (1999), "The Role of Perceived Risk in the Quality-value Relationship: A study in a Retail Environment," *Journal of Retailing*, 75(1), 77-105.
- Thaler, R. (1985), "Mental Accounting and Consumer Choice," *Marketing Science*, 4(3), 199-214.
- Van Birgelen, M., De Jong, A. and De Ruyter, K. (2006), "Multi-channel Service Retailing: The Effects of Channel Performance Satisfaction on Behavioral Intentions," *Journal of Retailing*, 82(4), 367-377.
- Venkatesh, V. and Davis, F. D. (2000), "A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies," *Management Science*, 46(2), 186-204.
- Wang, J. S., Wu, J. C. T. and Fu, H. H. (2010), "The Effect of Service Quality on Perceived Value, Brand Reputation and Loyalty: A Study on Traveling Industry," *Journal of Information & Optimization Sciences*, 31(3), 659-678.
- Wang, Y. S. (2008), "Assessing E-commerce Systems Success: A Respecification and Validation of the DeLone and McLean Model of IS Success," *Information Systems Journal*, 18(5), 529-557.
- Wang, Y., Lo, H. P., Chi, R. and Yang, Y. (2004), "An Integrated Framework for Customer Value and Customer-relationship-management Performance: a Customer-based Perspective from China," *Managing Service Quality*, 14(2), 169-182.
- West, D. M. (2006), *Global E-Government, 2006*, Center for Public Policy, Brown University.
- Woodruff, R. (1997), "Customer Value: The Next Source for Competitive Advantage," *Journal of the Academy of Marketing Science*, 25(2), 139-153.

- Zeithaml, V. (1988), "Consumer Perception of Price, Quality and Value: A Means-End Model and Synthesis of Evidence," *Journal of Marketing*, 52(3), 2-22.