

The Contribution of Commitment Value in Internet Commerce: An Empirical Investigation

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ABSTRACT

Exploring what makes Internet customers satisfied is perhaps one of the most important challenges facing customer relationship managers in this decade. It is important because prior studies suggest that happy customers make repeat purchases and develop brand loyalty. However, there is not enough accumulated knowledge to understand specifically the determinants of customer satisfaction in Internet commerce. To more accurately understand the determinants that may enhance a customer's satisfaction with their Internet shopping experience, this study looks at the

customer's commitment value and examines its relationships with the customer's satisfaction. Commitment value is defined as a total value perception from a buyer and is composed of three components: sociopsychological, economic, and product values. The results from this study show that the sociopsychological value (i.e., shopping enjoyment and convenience in purchasing) and the product value (i.e., product quality) contribute significantly to the attainment of customer satisfaction. The economic value (i.e., reduction of time spent in Internet shopping), however, has no significant positive impact on customer satisfaction. Explanations are presented along with the implications.

Keywords: Internet commerce, commitment value, sociopsychological value, economic value, product value, shopping enjoyment, convenience in purchasing, product quality, customer satisfaction

I. INTRODUCTION

Internet commerce has experienced a remarkable growth since 1996. Internet commerce functions as a new distribution channel, enabling online vendors to provide products and services that are far more efficient and superior in many ways to traditional channels. Customers are provided with not only flexibility and convenience, but also many choices and lower costs. Successful companies such as Ebay, Amazon, and Monster.com, among many other online vendors, continue to deliver great value for their customers. However, the recent slump in dotcoms has shattered the promising outlook for Internet commerce because many of the dotcoms have indeed failed.

While online vendors struggle for different reasons, one of the difficulties is reaching customers, attracting them to Web sites, and convincing those customers to make purchases. Even more challenging is the fact that success does not rest on a single transaction but on repeat purchases. Past research shows that happy customers make repeat purchases and develop brand loyalty [Dick and Basu 1994; Jones and Sasser 1995; Kim et al. 2000; Oliver 1997; Prichard and Howard 1999; Szymanski and Hise 2000; Tellis 1988]. Thus, knowing what satisfies Internet customers becomes the key to the success of any online vendor [Alba et al. 1997; Eighmey 1997].

In many ways, Internet commerce has transformed not only the business operation but also the relationship between the business organization and its customers. At the core of the relationship between the online vendor and its customers is customer satisfaction. In order to build a valued relationship with customers, it is necessary for online vendors to understand the factors that contribute to customer satisfaction in Internet commerce.

There has been extensive marketing literature on customer satisfaction. While knowledge of customer satisfaction in a traditional market is valuable, in many cases it cannot be generalized and applied directly to the context of an Internet market. The antecedents to customer shopping behavior are well documented in the marketing literature [e.g., Ganesan 1994], but unfortunately may not be applicable in predicting the satisfaction of Internet customers. One of the difficulties could be attributed to the complexity in the behavior of customers because of the virtual nature of the Internet. Unlike their counterparts in traditional settings, Internet customers are transparent through the entire transaction process of online purchasing. Hence, it is not easy to pinpoint how a customer interacts and responds while shopping online. Although general levels of online shopping behavior have been reported [e.g., Bellman et al. 1999], there is no systematic research that looks rigorously into the determinants of customer satisfaction in Internet shopping. As a result, a gap still exists in our accumulated knowledge about why some people choose Internet shopping instead of traditional channels and therefore how the determinants of customer satisfaction in Internet commerce should be characterized. Little is known about the relationship between customer satisfaction and the

customer's own values. In our study, we focus mainly on this gap. Rather than looking at customer satisfaction from a vendor's perspective [e.g., Lee 1999], we are interested in examining the factors intrinsic to customers, particularly the relationship between customer satisfaction and the customer's commitment value.

The primary purpose of our study is twofold. First, to conceptualize the notion of commitment value, which is drawn from Keeney's [1999] research finding for exploring customer value in Internet commerce. Second, to explore commitment value as an important factor that may influence the level of Internet customer satisfaction. More specifically, we investigate whether or not online shopping behavior in Internet commerce is dependent on the customer's perception of commitment value, which we synthesize to include three components: sociopsychological value, economic value, and product value. We then examine the effect of our proposed commitment value on customer satisfaction using individuals with prior Internet shopping experience who have made repeat purchases.

This paper is organized into six sections. Following this introduction is the conceptual framework, where we focus on our conceptualization of the key constructs based on the existing literature and elaborate on their distinctions from other related constructs. Then, based on our conceptual framework, we formulate the proposed hypotheses for testing in this study. In section three, we describe the chosen research methodology and the design of our field study. In section four, we present the analysis and findings from the field survey, while in section five we discuss the significance of the findings and their implications. Finally, we conclude the paper with our discussion of the contributions and suggestions for future research directions.

II. CONCEPTUAL FRAMEWORK

In this section, we synthesize our conceptual framework from the previous literature. Our focus is on customer satisfaction and commitment value as two main constructs as well as on their potential relationship. Our intention is to provide a plausible rationale for the recognition of commitment value as an important factor to reap greater customer satisfaction in Internet shopping.

CLARIFICATION OF BASIC TERMINOLOGY

In this section, we first clarify our notion of *commitment value*. Then, based on this distinction from other related concepts, we establish the focus and the scope of our study. The section is intended to minimize potential confusion as well as to establish a proper context before delving into the detailed conceptualization of commitment value and its relationship to customer satisfaction. As mentioned earlier, commitment value is one of the key constructs in this study. For the purpose of clarification, we briefly define commitment value as a total value perception from a buyer who repetitively purchases certain products and repetitively uses those products. A detailed conceptualization of commitment value will be addressed in the next section. However, at this point we would like to clarify our notion of commitment value in the light of other related concepts such as consumer value and customer value. It is important to make this distinction because the existing literature seems to use them interchangeably so that previous empirical research has generally produced mixed results. First is the term *buyer*. Should a buyer be regarded as a customer or a consumer? One way to differentiate a customer from a consumer is to consider the process of purchasing against the product being purchased and consumed. A buyer becomes a consumer when the individual uses or consumes a product during or after a purchasing transaction. A customer, on

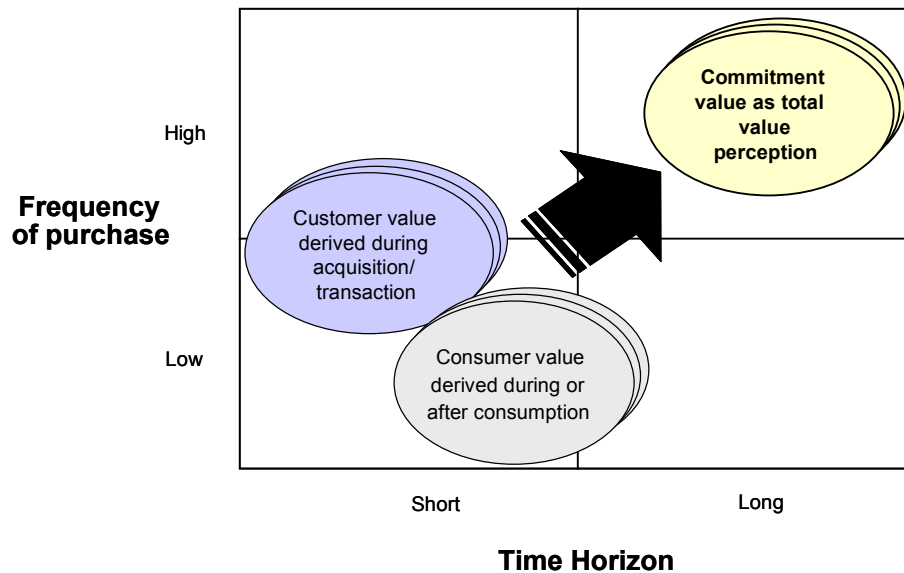


Figure 1. Conceptualizing the Distinctions among the Three Notions:
Commitment Value, Customer Value, and Consumer Value

the other hand, is associated with the process of purchasing. A customer may not necessarily be a consumer, for instance, in the case of gifts or commercial purchases. This distinction is important for the synthesis of our proposed commitment value, which in essence can be understood as the sum of the customer value and consumer value. This then leads to the next clarification: what is the customer value versus the consumer value and how do they differ from our proposed commitment value?

According to the traditional marketing principle, *value* simply refers to the value maximization as perceived by a purchaser given constraints such as limit in search costs, knowledge, and disposable income. Kotler et al. [1996] quantified customer delivered value as the difference between total customer value (e.g., a bundle of benefits expected from customers) and total customer cost. Consumer value, on the other hand, is often signified in terms of utility, worth, benefit, and quality derived from a consumption process. Woodruff's [1997] characterization of a desired and received value as perceived by a buyer during or after the consumption of a product is perhaps a good example of consumer value. Based on our simple characterization above, we argue that customer value and consumer value are related to commitment value but they are not exactly similar. In the context of our study, we attempt to put these three important notions—customer value, consumer value, and commitment value—into perspective in order to help us understand more precisely their similarities and differences. Figure 1 presents our visualization of these three values.

Customer value, we posit, is the value perceived by a buyer of a product (at random) and derived from the acquisition or transaction, whereas consumer value is the value perceived by a user of a product and derived from the consumption process. The consumer may or may not be involved in the acquisition of the product, for example, when a person receives a gift purchased by someone else. At a higher level, commitment value, as we propose, is concerned with the total value perceived by a customer, a consumer, or both. It is the result of repeat purchases and/or repeat uses of the

product over a period of time as depicted in Figure 1. We realize that there are many different definitions of customer value and consumer value in the literature. Our intention here is not to redefine these values but simply to associate as well as differentiate them from our proposed commitment value. In order to keep the scope of this study manageable, we restricted our focus to an exploration of the commitment value perceived mainly by customers involved in the online transaction process even though they might not necessarily be customers of the product.

CUSTOMER SATISFACTION

The concept of customer satisfaction is often regarded as one of the central issues in Internet marketing practice. Meeting or exceeding customer expectations is considered to be a critical success factor for Internet commerce. The findings from previous studies suggest that satisfied customers are generally profitable to businesses and particularly indispensable to the survival and success of a highly competitive Internet commerce. It also reports that satisfied customers tend to make not only more purchases but also repeat purchases [Kim et al. 2000; Szymanski and Hise 2000].

From our review of the literature, we came across a number of studies that focused on key determinants of customer satisfaction. Two streams of approaches can be identified. The first stream explores the determinant of customer satisfaction in terms of perceptions and expectations. For instance, Tse and Wilton [1988] analyzed customer satisfaction formation. Their results showed that not only expected performance and subjective disconfirmation but also perceived performance exerted a direct and significant influence on the level of customer satisfaction. However, according to Tse and Wilton, expectation and subjective disconfirmation seemed to be the best conceptualization in capturing customer satisfaction formation. Cooper et al. [1989] adapted the SERVQUAL instrument proposed by Parasuraman et al. [1988] to investigate the ratio and difference between perceptions and expectations. Based on these studies, customer satisfaction is generally presumed to be attributed by the degree to which customer's expectations are realized. The second stream looks at the determinants of customer satisfaction from the perspective of satisfaction antecedents and consequences. For instance, Szymanski and Hise [2000] introduced the concept of e-satisfaction, which was measured by adapting two commonly employed measures of satisfaction, the degree to which the customer is satisfied/dissatisfied and pleased/displeased with Internet shopping. Also, they examined several items as antecedents of e-satisfaction such as online convenience, merchandising, site design, and the financial security of Internet transactions. Ho and Wu [1999] measured customer satisfaction on the Internet using two overall indicators: confirmation of customers' needs and high degree of satisfaction. Ho and Wu's study considered five factors as the antecedents of customer satisfaction: logical support, technology characteristics, information characteristics, homepage presentation, and product characteristics.

Although previous studies of Internet commerce have investigated the relationship between the customer satisfaction and its antecedents, these studies are mostly based on the seller's perspective. As a result, the concerns tend to be seller centric. While the outcomes from these studies provide useful suggestions that sellers should consider in increasing customer satisfaction (e.g., effective design of a Web site storefront, offering promotion, improving customer service, providing efficient logistics support, etc.), there is little insight considering the customer's own behavior and value. Therefore, one emphasis in our study is to examine the potential determinants of customer satisfaction in Internet commerce from the customer's own point of view.

Drawing from an extensive literature, Giese and Cote [2000] conceptualized the notion of satisfaction in the following way: "consumer satisfaction is a summary affective response of varying

intensity with a time-specific point of determination and limited duration and is directed toward focal aspects of product acquisition and/or consumption.” To apply this definition in our own context, we view customer satisfaction as an emotional or cognitive response pertaining to a particular focus (e.g., comparing performance to some standard or level of expectation) determined at a particular time (e.g., prepurchase, during the transaction, or post-purchase and consumption). Based on this definitional framework of customer satisfaction, we establish our focus and the specific context in which we examine the relationship between the customer satisfaction and the commitment value in Internet commerce from the buyer or customer’s perspective.

COMMITMENT VALUE

In this study, we propose that commitment is central to Internet commerce between businesses and customers. Although the discussion of commitment in Internet commerce is fairly new, the notion of commitment has been introduced and applied extensively in marketing and organizational behavior. For instance, Cook and Emerson [1978] considered commitment as a crucial variable in distinguishing social from economic exchange. Organizational commitment is among the oldest [Becker 1960] and most studied [Reichers 1985] variables in organizational behavioral theory. Therefore, the literature contains many different interpretations and applications of the commitment construct. For instance, a number of studies showed that commitment helped to reduce turnover and boost motivation in an organization [Farrell and Rusbult 1981; Porter et al. 1974]. Other studies found the positive effects of commitment on recruiting and training practices [Caldwell et al. 1990], job equity [Williams and Hazer 1986], and organizational support [Eisenberger et al. 1990].

Extending the notion of commitment to the context of Internet commerce, we propose commitment to be an essential construct contributing to successful long-term relationships between purchasing groups and supplying groups [Dwyer et al. 1987; Morgan and Hunt 1994]. Drawing on the conceptualization of commitment in social exchange [Cook and Emerson 1978], marriage [Thompson and Spanier 1983], and organization behavior [Meyer and Allen 1984], we characterize commitment as an enduring desire of both businesses and their customers to maintain a valued relationship. The *valued relationship* indicates that commitment exists only when the relationship is considered important, whereas the *enduring desire to maintain* means that a committed customer wants to sustain the relationship for the longer term. Berry and Parasuraman [1991] mention that relationships are built on the foundation of mutual commitment. Similarly, the process through which customers become loyal to specific brands has been widely discussed. Initially, loyalty was viewed as simply repeat buying, but as the field of customer behavior matured, researchers came to realize that repurchase was not sufficient evidence of brand loyalty and that such measures as purchase patterns included much “spurious loyalty” [Day 1970]. As brand attitude becomes central to the repurchase decision in relationship exchange, brand loyalty becomes increasingly similar to our conceptualization of commitment. In fact, Assael [1987] defines brand loyalty as commitment to a certain brand arising from certain positive attitudes.

Based on the work of Assael and of Day, we define our proposed commitment value as a total value perception from a buyer who repetitively purchases and/or repetitively consumes or uses certain products over a period of time. In the non-Internet marketplace, customer loyalty is primarily the product of superior service or product quality. Gefen [2002], in his study of customer loyalty in e-commerce, found the same tendency also applies with online vendors even though the transaction was mediated through an electronic medium rather a face-to-face setting. To the best of our knowledge, little is known about the potential role of commitment in Internet commerce. No prior study has

conceptualized and studied the role of commitment by examining buyers' perceptions of the superior value or extra benefit that they derived from the process of purchasing and using the product over a period of time. We predict that such a perception can be a critical factor leading not only to brand loyalty but also to repeat purchases and consumption. We refer to this superior value or extra benefit as *commitment value*. It is distinct from either customer value or consumer value because it involves a level of enduring desire by both the buyer and the supplier to maintain a valued relationship. This implies the importance of a time horizon factor in commitment value. Thus, by considering factors such as frequency of repurchase and the time horizon, as shown in Figure 1, we expect that the pattern of transactions is likely to develop into a valued relationship, in which commitment is not only relevant but is likely to play a central role in both the buyer's and the seller's behavior in Internet commerce.

As pointed out earlier, customer delivered value is regarded by Kotler et al. [1996] as the difference between total benefits and total costs. To focus on the value salient to a purchase decision or transaction, Keeney [1999] narrowed his definition of customer value to the net difference between the benefits and the costs of both the product and the process for finding, ordering, and delivering the product. The generally accepted definition for value concentrates on the total worth of the benefits received for the price paid [Anderson and Narus 1998]. This definition suggests that any model of total value must consider both benefits and costs: benefits that add value to the channel relationship (including both direct, monetary and indirect, non-monetary functions and activities) and cost factors (e.g., price or costs associated with the channel relationship) that offset the value added.

While our proposed commitment value has its roots in both customer value and consumer value, its implication goes beyond the economic consideration. We characterize commitment value as a bundle of values that customers may expect from a given product or service. This bundle consists of not only economic value but also sociopsychological value and product value. These three components are drawn and synthesized from the theoretical and empirical work in organizational behavior [Allen and Meyer 1990; Gruen et al. 2000; Gundlach et al. 1995; Keeney 1999; Wiener 1988]. We argue that business organizations can foster commitment value by providing a bundle of these values to their customers [Allen and Meyer 1990; Mathieu and Zajac 1990].

CONCEPTUAL MODEL AND PROPOSED HYPOTHESES

In this study, we focus on one particular antecedent of customer satisfaction: the commitment value. Little is known about the relationship between customer satisfaction and commitment value in Internet commerce. Based on our understanding of commitment value, we propose that commitment value may be the driving force behind repeat Internet shopping and consequently may serve as a crucial link to extend the interaction between customer satisfaction and repeat Internet shopping.

In the context of our field study, we adopted Keeney's [1999] customer value model to derive measures for our proposed commitment value, which consists of economic value, sociopsychological value, and product value. Based on Keeney's conceptual framework, we describe economic value as a monetary saving obtained from cost and time reduction in Internet shopping. Sociopsychological value means convenience and enjoyment aspects during shopping on the Internet, while product value is originated from purchased products themselves (i.e., product quality).

To investigate the relationship between customer satisfaction and commitment value, we develop a conceptual model and its hypotheses for this relationship as depicted in Figure 2. Since we apply the concept of commitment to Internet commerce, we want to address whether organizations should identify key commitment value from their customers and promote this value as a key to achieve a high

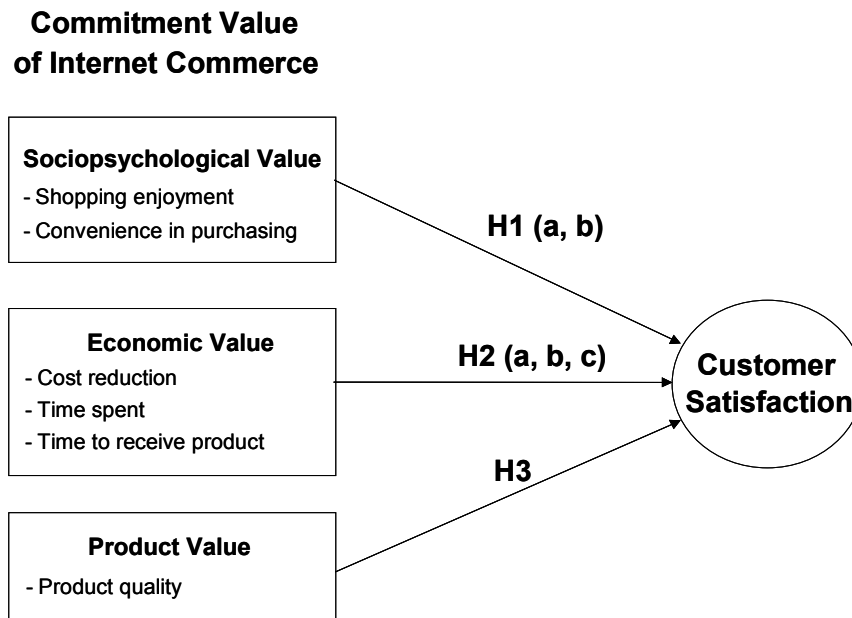


Figure 2. Research Model on the Relationship Between Commitment Value and Customer Satisfaction

level of customer satisfaction. We posit that commitment value is not only central to customer behavior in Internet commerce but also essential for promoting a high level of customer satisfaction.

Customer satisfaction is associated with emotional responses to the experiences provided by particular products or services purchases, retail outlets, or patterns of shopping and buyer behavior [Westbrook and Reilly 1983]. Also, customer satisfaction is manifested as fulfillment responses when a product or service provides a pleasurable level of purchasing and consuming [Halstead et al. 1994; Oliver 1992, 1997]. These responses can occur before and during the purchase, or during and after consumption. As mentioned earlier, since the scope of our study is not on the consumption process, our hypotheses focus mainly on the buyers' perception of the superior value or extra benefit that they derived from the experiences of their online purchase or acquisition process and not from their consumption of the products. The strong association between customer satisfaction and affective or cognitive responses leads us to our first hypothesis.

H1: Sociopsychological value in Internet commerce is positively associated with customer satisfaction.

H1a: Shopping enjoyment in Internet commerce is positively associated with customer satisfaction.

H1b: Purchasing convenience in Internet commerce is positively associated with customer satisfaction.

A recent survey of 10,000 Internet customers found that only 36 percent of Internet customers are satisfied with their online interactions as well as Internet shopping experiences [Lehman 2000].

This survey further found that Internet customers have higher expectations for the time it takes to resolve a problem than do offline consumers. Thus, *time spent* is an important factor in the consideration of the overall customer satisfaction. Aside from the emotional and cognitive responses, researchers also show a strong connection between the economic value and the level of customer satisfaction after purchase and use. For instance, Churchill and Surprenant [1982] conceptualized customer satisfaction as an outcome of purchase and use resulting from the buyer's comparison of the rewards and costs of the purchase relative to anticipated consequences. Fornell [1992] associated customer satisfaction with an overall post-purchase evaluation including the comparison of costs and benefits. Based on the potential relationship between economic value and customer satisfaction, we propose our second hypothesis:

- H2: Economic value in Internet commerce is positively associated with customer satisfaction.*
- H2a: Cost reduction in Internet commerce is positively associated with customer satisfaction.*
- H2b: Reduction of time spent in Internet commerce is positively associated with customer satisfaction.*
- H2c: Reduction of time to receive product in Internet commerce is positively associated with customer satisfaction.*

Another dimension of customer satisfaction involves product value, which is extracted from the product quality. In our study, the product quality is characterized in terms of the cost and benefit relationship. Product value is maximized when the customer gets the best product for the expected payment, since one of the dimensions in customer satisfaction involves the attributes of products or services offered. The better the perception of the product quality compared to some prepurchase standard, the higher the level of satisfaction is likely to be during and after the purchase and vice versa [Halstead et al. 1994; Oliver 1992; Swan et al. 1982]. Taking this conceptualization of product quality as a premise, we hypothesize the relationship between product value and customer satisfaction as follows:

- H3: Product value (i.e., product quality) in Internet commerce is positively associated with customer satisfaction.*

III. RESEARCH METHODOLOGY

The main method of data collection for this study was the use of a survey. The data gathered from the survey was then tested using partial least squares (PLS). The unit of analysis was the individual Internet customer with prior Internet shopping experiences. These prior experiences were necessary because the commitment value, as we proposed, could only be derived from repeat purchases.

MEASURES

After developing the research framework, we conducted a series of personal interviews with five Internet commerce professionals in Taiwan to assess the external validity of our research model.

Based on our review of the previous related literature and the comments gathered from our interviews, we constructed our survey instrument. We used the multiple-item method in which each item was measured on a five-point Likert scale from strongly disagree to strongly agree. The items in our survey instrument were developed either by adapting the existing measures validated by other researchers (e.g., commitment value-related factors) or by converting the definitions of the constructs into a questionnaire format (e.g., customer satisfaction).

More specifically, the commitment value gauged the degree to which an Internet customer expressed the level of his/her preferences. We based our measures for the commitment value on Keeney's [1999] study on the value of Internet commerce to the customer. In his research finding, Keeney specified nine fundamental objectives in his customer value model. Among Keeney's nine fundamental objectives, we adopted shopping enjoyment, convenience in purchasing, cost reduction, time spent, time to receive product, and product quality as key variables in our study. We applied the measures of these variables and associated them with the comments from the interviews with our Internet commerce professionals and the context of our study. For instance, in the case of time-spent measures, we classified them into two subcategories: time to search a product and time to order a product. For the measures of the dependent variable (i.e., customer satisfaction), we adapted three commonly employed measures for the satisfaction of service quality. They include (1) the degree to which the customer is satisfied with the service quality of Internet commerce [Zeithaml et al. 1996], (2) the likelihood that the customer would recommend the service to others [Spreng et al. 1996], and (3) the likelihood that the customer would purchase something again [Rosen and Karwan 1994]. All measures used in the study are shown in Appendix A with their means, standard deviations, and internal consistency.

The initial version of our survey instrument was subsequently refined through extensive pretesting with 15 academics who have significant expertise in the study of Internet commerce. The instrument was further pilot tested with 18 students enrolled in an MIS course at a university in Taiwan. The multiple phases of instrument development in Taiwan resulted in a significant degree of refinement and restructuring of the survey instrument as well as establishing the initial face validity and internal validity of the measures [Nunnally 1978].

DATA COLLECTION

For the main survey of this study, we selected Hong Kong as our research context. Hong Kong has not only a similar culture with Taiwan, but also a higher Internet adoption ratio (50% of adult population) and Internet purchasing ratio (8%) [Taylor Nelson Sofres 2002] than does Taiwan (Internet adoption ratio: 25%; Internet purchasing ratio: 4.5%) [[http://www.find.org.tw/ 0105/news/0105_news_disp.asp?news_id=1667](http://www.find.org.tw/0105/news/0105_news_disp.asp?news_id=1667), in Chinese]. Although this study focused mainly on the data set from Hong Kong, its data interpretation benefitted from the background knowledge of a large research project that involved four other countries.

Data was collected using a self-administered English-version questionnaire. Subjects were part-time undergraduate students enrolled in an introductory MIS course at a major university in Hong Kong. All of them had full-time jobs, working in companies with a variety of business natures. As in the pretest, only responses from the subjects with prior purchasing experiences through Internet commerce were included for the main survey analysis. The reason was because respondents with no Internet shopping experience could hardly be expected to have commitment value. From the 120 questionnaires distributed, we received 115 responses, which yielded a response rate of about 96 percent. Out of the 115 responses, three responses were eliminated from analysis due to incomplete

Table 1. Demographic Information of Subjects

Gender		Age (Standard Deviation)	Average Number of Internet Shopping
Male (%)	Female (%)		
51 (78.5 %)	14 (21.5 %)	22.43 (0.66)	2.45

data and 47 responses with respondents who had no prior experience with Internet shopping were discarded. Consequently, we were able to obtain 65 responses for use in the final analysis of our study.

Although the use of students as subjects might limit the generalizability of the results [Hughes and Gibson 1991], the results from students familiar with the Internet could be meaningful and valuable for organizational decision makers to better understand potential customers' behaviors for Internet commerce [Liang and Huang 1998]. Table 1 shows the demographic information for the subjects in terms of gender, age, and average number of Internet shopping experiences.

IV. ANALYSIS AND FINDINGS

ANALYSIS METHOD

Realizing the limitations of exploratory approaches such as regression analysis, we adopted a confirmatory approach using partial least squares (PLS) as our analysis method for the following reasons. First of all, while PLS has been used widely for theory testing or confirmation, it is also an appropriate approach for examining whether relationships might or might not exist and thus suggesting propositions for testing later [Fornell and Bookstein 1982]. In other words, PLS is suitable for assessing theories in the early stages of development such as this study. Second, PLS relies on a relatively smaller sample size for validating a model than other structural equation modeling techniques [Chin 1998]. The recommended sample size, as suggested in the literature, is at least 10 times the number of independent variables affecting a dependent variable. Based on this threshold, our sample size of 65, although small, was still within the acceptable level given the six independent variables stated in our research model (cf., Figure 2). This made PLS appropriate for testing our proposed model with the available data that we gathered. We used PLS-Graph version 2.91 for analyzing the measurement and structural models.

MEASUREMENT MODEL

To validate our measurement model, we undertook three validity assessments of the instrument: the content validity, the discriminant validity, and the convergent validity. First of all, the content validity of our instrument was established from the literature. Our measures were constructed by adopting the existing measures of constructs that have been validated by other researchers and were based on the suggestions in the literature, the results of our pretesting with experts in field of Internet commerce, and the pilot test data gathered from Taiwan.

Table 2. The Result of Confirmatory Factor Analysis

Measure (Acronym)	Items	Composite Reliability	Variance Extracted
Sociopsychological Value			
Shopping enjoyment (SHOENJ)	4	0.874	0.733
Convenience in purchasing (CONPUR)	4	0.864	0.671
Economic Value			
Cost reduction (COSRED)	5	0.904	0.701
Time spent (TIMSPE)			
Product searching time	4	0.875	0.687
Product order time	4	0.895	0.722
Time to receive product (TIMPRO)	3	0.947	0.866
Product Value			
Product quality (PROQUA)	4	0.832	0.625
Customer Satisfaction	3	0.829	0.674

Second, we assessed the discriminant validity of our instrument by looking at the correlations among questions [Fornell and Larcker 1981]. According to the rule of thumb in discriminant validity, a measure should correlate with all measures of the same construct more highly than it does with any measures of other constructs [Chin 1998]. In the assessment of the discriminant validity of our instrument, we tested 37 items that measured our six independent variables and three items that measured our only dependent variable. In our further analysis, we had to drop nine items related to the independent variables because they had item-to-total correlations of lower than 0.5.

Finally, we assessed the convergent validity by looking at the composite reliability of measures and the variance extracted by measures [Hair et al. 1995]. Although many studies employing PLS had used 0.5 as an indication of reliability of measures, a score of 0.7 is a recommended value to be a reliable construct [Chin 1998]. As shown in Table 2, our composite reliability values were in the range from 0.829 to 0.947, which were above the acceptable value. For variance extracted by measures, a score of 0.5 indicates its acceptable level [Fornell and Larcker 1981]. Table 2 shows that our variance extracted by measures were in the range from 0.625 to 0.866, which exceeded the recommended value.

STRUCTURAL MODEL

Besides the validity assessment of the measurement model, one other important check that we performed was the check on multicollinearity. Multicollinearity may potentially exist among the independent variables. Table 3 displays the correlations among the determinants of customer satisfaction. The highest correlation, 0.540, existed between cost reduction and time to receive product. The remaining correlations ranged from -0.191 to 0.449. These correlations indicated that multicollinearity was not a severe problem for the proposed model, particularly when the purpose of the

Table 3. Correlation between Independent Variables

Variables	SHOENJ	CONPUR	COSRED	TIMSPE	TIMPRO	PROQUA
SHOENJ	1.000	—	—	—	—	—
CONPUR	0.299**	1.000	—	—	—	—
COSRED	0.216	0.217	1.000	—	—	—
TIMSPE	0.449**	0.358**	0.182	1.000	—	—
TIMPRO	0.274**	0.426**	0.540**	0.222	1.000	—
PROQUA	0.216	0.317**	0.281**	-0.191	0.195	1.000

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

analysis was to make inferences on the response function or prediction of new observations [Neter et al. 1985], which was the case in this study.

With adequate measurement models and an acceptable level of multicollinearity, our proposed hypotheses were tested using PLS. The results of the analysis are summarized in Figures 3 and 4. We did a two-stage analysis of structural equation modeling. In the first stage, we assessed the aggregate impact from each group (i.e., sociopsychological value, economic value, and product value) on customer satisfaction (see Figure 3), whereas in the second stage, we assessed the individual effect of each independent variable on customer satisfaction (see Figure 4).

Figures 3 and 4 contain the path coefficients and t-values resulting from the PLS model. As proposed in Hypotheses 1a and 1b, shopping enjoyment ($\beta = 0.268$; $t = 3.767$; $p < 0.01$) and convenience in purchasing ($\beta = 0.622$; $t = 6.643$; $p < 0.01$) in Internet commerce were significantly related to customer satisfaction. In addition, overall sociopsychological value ($\beta = 0.421$; $t = 2.587$; $p < 0.01$) showed a significant positive relationship with customer satisfaction, which supported Hypothesis 1. This means that the more positive the Internet shopping experience in terms of enjoyment and convenience of shopping, the higher is the likelihood of customer satisfaction.

The test results of Hypotheses 2a, 2b, and 2c are illustrated in Figure 4. The results showed that cost reduction ($\beta = -0.162$; $t = -1.107$) and time to receive product ($\beta = -0.098$; $t = -0.997$) in Internet commerce had no effect on customer satisfaction, indicating the lack of support for Hypotheses 2a and 2c. However, interestingly, reduction of time spent ($\beta = -0.402$; $t = -4.023$; $p < 0.01$) in Internet commerce was negatively associated with customer satisfaction, contradicting Hypothesis 2b. This means that customer satisfaction is lower when reduction of time spent in Internet commerce is higher. Also, overall economic value ($\beta = -0.178$; $t = -0.897$) of Internet commerce displayed no significant impact on customer satisfaction.

Finally, in Hypothesis 3, we investigated the influence of the product value in Internet commerce on customer satisfaction. The PLS results showed that the individual effect of product value variable ($\beta = 0.261$; $t = 2.046$; $p < 0.05$) in Internet commerce was significantly related to customer satisfaction (see Figure 4). However, the aggregate impact of product value variable ($\beta = 0.097$; $t = -0.625$) displayed no significant effect on customer satisfaction (see Figure 3). The findings implied that the aggregate impact of product value variable on customer satisfaction was suppressed by the sociopsychological value. However in the individual level, the suppressive effect [Cooper and Emory 1995, p. 418] on product value was reduced. Therefore, we found that product value was positively associated with customer satisfaction in the individual level of PLS analysis. Thus, Hypothesis 3 was

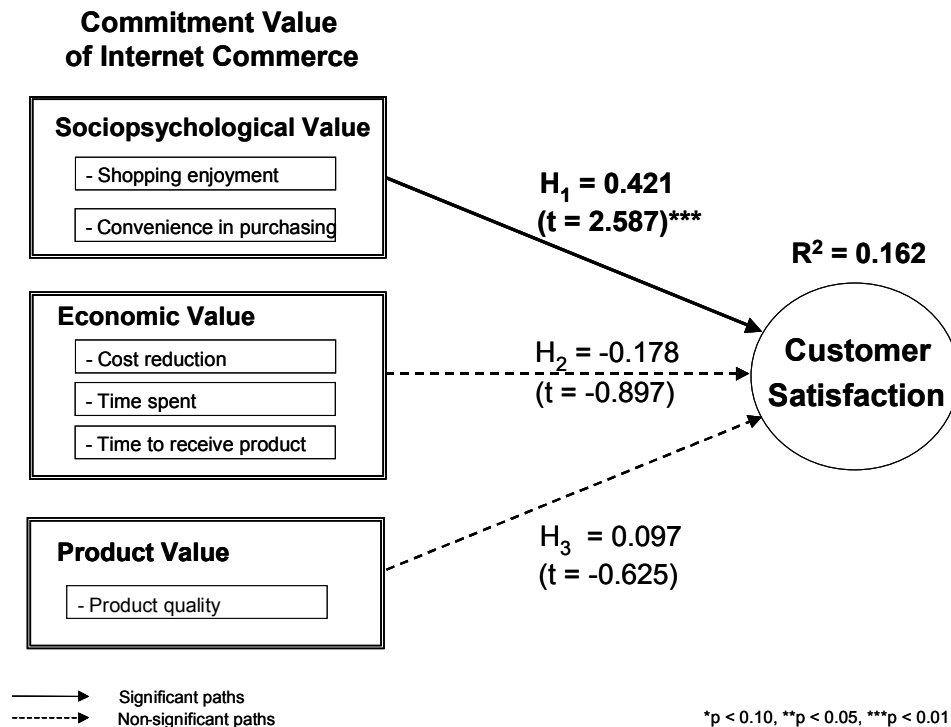


Figure 3. Results of PLS Analysis Focusing on Each Group of Independent Variables

supported only in the individual level of PLS analysis. Although the results for product value were reported here, the conclusion must remain tentative. However, based on these results, we may consider product value as a critical factor to directly influence the success of Internet commerce.

V. DISCUSSION AND IMPLICATIONS

What is the potential relationship between commitment value and customer satisfaction in Internet commerce? In our conceptual framework, we derived measures for our proposed commitment value in terms of economic, sociopsychological, and product values. We then presented our research model with six proposed hypotheses for testing. According to the results from the analysis of the data gathered in Hong Kong, both sociopsychological value (i.e., shopping enjoyment and convenience in purchasing) and product value (i.e., product quality) contributed significantly to the attainment of customer satisfaction, whereas economic value had no significant positive impact on customer satisfaction.

Previously, Keeney [1999] described 25 categories of objectives that were influenced by Internet shopping. While his descriptive model provides the basic context for understanding customer behaviors in Internet commerce, it has not been validated by any statistical approach or quantitative

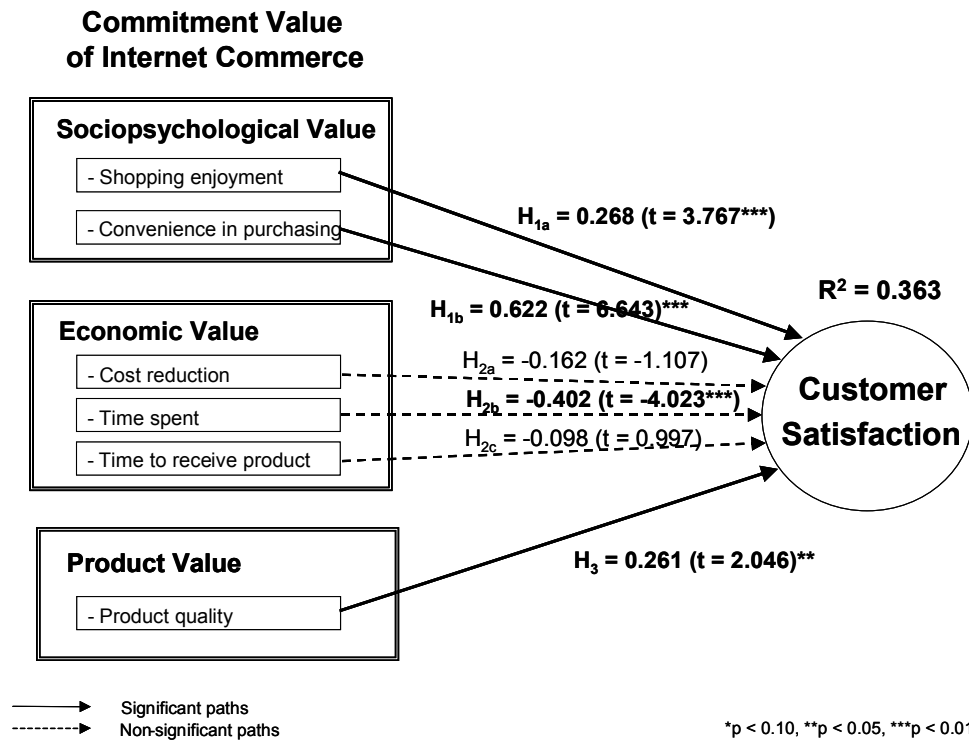


Figure 4. Results of PLS Analysis Focusing on Each Independent Variable

means. All of the objectives in his model were extracted from interviews with individuals, hence qualitatively deduced but not quantitatively assessed. Based on Keeney's work, Torkzadeh and Dhillon [2002] subsequently developed instruments to measure objectives that influenced online purchases, but these instruments did not address the relationship between Keeney's objectives and customer satisfaction.

To strengthen Keeney's model conceptually, we introduced the notion of commitment value and associated it with the objectives that Keeney proposed in his model of customer value. We derived the measures for our proposed commitment value and categorized them into three specific dimensions of commitment value, namely sociopsychological value, economic value, and product value. By examining commitment value from the sociopsychological, economic, and product perspectives, we attempted to assess whether or not it had any role and impact as well as any relationship with customer satisfaction. In our PLS analysis, sociopsychological value (i.e., shopping enjoyment and convenience in purchasing in Internet commerce) and product value (i.e., product quality) were significantly and positively associated with the degree of attainment of customer satisfaction, while economic value showed no statistically significant association with customer satisfaction. Based on the results, it seems that shopping behavior in Internet commerce is mainly and positively dependent on customers' perception of shopping enjoyment, convenience in purchasing, and product quality rather than those of cost reduction, time spent, and time to receive product.

The findings of our study appear to be consistent with a number of previous studies. A recent study conducted by Moon and Kim [2001] reported the importance of sociopsychological value such as playfulness as an intrinsic motivation factor in an individual's acceptance and usability of the Internet. This means that the Internet could be used for leisure or fun such that the sociopsychological concept may play an important role in increasing usability in the Internet environment. Another consistent finding is related to purchasing convenience, which has been identified as a critical factor by other researchers [Armstrong and Hagel 1996; Jarvenpaa and Todd 1997; Pastore 2001]. These studies suggest that, rather than economic value factors regarding shopping time and cost, customers of Internet shopping are strongly sensitive to convenience in purchasing such as time flexibility in purchasing, ease of finding needed products, and minimum effort of shopping, among other factors.

In this study, we derived two unexpected and interesting results. One is related to product quality and the other related to reduction of time spent in Internet shopping. The general perception about product quality is that since most of items traded in Internet commerce are standard products, such as books, CDs, and software, and the product customers want to buy through the Internet is known in advance, it may not be a critical factor of customers' overall satisfaction [Enis and Roering 1980]. Interestingly, product quality can be viewed as fitness of use: does the product or service do what it is supposed to do [Garvin 1995]? That is, product quality may be expressed as how well the product delivered matches the customers' expectations. In Internet shopping, customers' expectations are mainly built by the information that the web site affords. Therefore, if Internet customers realize that the information provided about the product or service corresponds to the delivered product or service, they will be satisfied with their decision to shop on the Internet, which subsequently leads to repeat purchases.

The other interesting finding was that reduction of time spent in Internet shopping had a significant negative effect on customer satisfaction. It is both counterintuitive and inconsistent with the previous research [Churchill and Surprenant 1982; Fornell 1992]. The negative relationship between the time spent in Internet shopping and customer satisfaction indicates that the shorter the time an Internet customer searches for the product information, the lower might be his or her satisfaction. While the Internet indeed makes shopping more convenient, the findings from our study suggest that an Internet customer would like to use more time to search for product information. Therefore, Internet convenience does not necessarily shorten the time spent on Internet shopping. According to Urbany et al. [1989], the product choice uncertainty appears to increase the customers' information-search time prior to making a purchase decision. In other words, when the choice for the best alternative is broad and diverse, as in Internet shopping, product choice uncertainty occurs. As a result, a more extensive search for product information will be undertaken before a customer selects the best alternative among various products on the Internet. Customers will stop searching for product information when the uncertainty about the product is removed in the search process [Moorthy et al. 1997]. The findings from our study indicate that Internet customers in Hong Kong followed such information-search strategy when shopping online. They preferred to spend more time for information-search with the goal of acquiring cheaper and higher quality products. All of these factors contributed to customer satisfaction, although it seems counterintuitive to observe a negative effect from the reduction of time spent on customer satisfaction. However, the result makes sense because the evidence shows that Internet customers in Hong Kong tend to spend more time on Internet shopping and generally tend to feel satisfied with the process.

Based on the overall results from our study, we are convinced that the notion of commitment value might serve as an important catalyst for achieving higher customer satisfaction and hence might eventually prompt customers to make repeat purchases in Internet commerce. In other words, fostering a commitment relationship between the business organizations on the Internet and their

customers might be crucial for the attainment of customer satisfaction. If so, how can such a relationship be nurtured? We suggest that in the Internet shopping environment, customers are provided with plenty of choices and sources of information. Therefore, Internet customers may need to spend more time to find a better product by searching the needed information, prioritizing their options, and consolidating their purchase preferences while enjoying Web surfing itself with playfulness and fun. However, the strategy to eliminate Internet customer's product choice uncertainty and shorten their information-search process remains and needs careful examination.

VI. CONCLUSIONS

The intent of this study was to achieve two major purposes. One was to introduce our conceptualization of commitment value and the other was to assess its relationship with and impact on customer satisfaction in Internet commerce. We believe that a primary contribution of this study is in the exposure of the importance of commitment value and in the demonstration of the potential relationship between the commitment value and customer satisfaction. Based on our literature review, we synthesize and apply the concept of commitment value in the context of Internet commerce. While commitment value is related to customer and consumer value, it should be considered as a distinct construct as shown in Figure 1. Furthermore, to our current knowledge, this study is perhaps the first empirical research that attempts to develop and validate the instrument on commitment value. To extend the envelope further, it also tries to propose and test the relationship between commitment value and customer satisfaction. Although the evidence from our study remains exploratory, what it discloses seems to suggest that commitment value, especially sociopsychological value and product value, might be the driving force behind repeat Internet shopping and consequently might serve as a crucial link to extend the interaction between customer satisfaction and repeat purchases in Internet commerce. Also, we found an interesting result: in Hong Kong, Internet customers who spend more time shopping on the Internet have higher customer satisfaction.

A second contribution of this study is the result indicating that sociopsychological value and product value should be conceived as crucial determinants of customer shopping satisfaction rather than economic value. Despite its limited generalizability, the results provide some practical implications for information systems practitioners. One important implication for information systems practitioners is to reflect and recognize the sociopsychological and product values as crucial factors in achieving a sustainable level of customer satisfaction. Consequently, the practitioners should foster and incorporate the sociopsychological value in the design and implementation of an Internet commerce system as a way to attract customers to their Web sites. Also, in order to convince customers to make repeat purchases on the Internet, practitioners should provide the minimal difference between product information described in their Internet Web sites, customers' expectation about the product, and actual functionality of delivered product.

While the findings from this study provide some meaningful interpretations and practical implications, their generalization should be taken with caution. This study has a number of limitations and, therefore, further development for future study is needed. First, the use of self-report scales to measure the proposed variables suggests the possibility of a common method bias for some of the results. In order to pursue further investigation, it would be appropriate to develop a more direct and objective measure for the three commitment values and customer satisfaction. Second, the results indicated that the hypothesis on product value was supported only in the individual level of PLS analysis. Thus, although the findings for product value were reported, the conclusions must remain tentative. Third, the three components in the commitment value may be influenced by externally

controllable factors such as individual lifestyles and personal characteristics. Thus, to have a deeper understanding of commitment value may require the inclusion of a personal lifestyle factor [see Pi et al. 2000]. Fourth, we should admit that results from the student subjects used in this study may be somewhat different from the results that would be obtained using general Internet users who are more interested in Internet shopping. Fifth, though the size of the sample for this study was within the acceptable level for PLS analysis, it was not large enough to overcome the problem of biased results. Finally, the results of our study may have to be carefully interpreted since the sample was restricted to students in Hong Kong. Replications of this study need to be conducted to further validate the effect of commitment value on customer satisfaction. One way to have more generalizable results for all Internet commerce cases is to explore and compare the differences and similarities of the customers' Internet shopping behaviors between different countries with large enough data sets from general Internet users.

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APPENDIX A: QUESTIONNAIRE ITEMS

Construct	Item	Statistics
Shopping Enjoyment	Inspire customers Enhance user productivity Maximize customer confidence Reduce demand for forced labor	Alpha = 0.874 Mean = 3.731 S.D. = 0.654
Convenience in Purchasing	Maximize purchasing convenience Maximize time flexibility in purchasing Provide quality after-sales service Assure an easy return process	Alpha = 0.864 Mean = 4.181 S.D. = 0.632
Cost Reduction	Minimize product cost Minimize tax paid Minimize shipping cost Minimize internet cost Minimize travel cost	Alpha = 0.904 Mean = 3.871 S.D. = 0.806
Time Spent	Searching Time 1) Minimize queuing time 2) Minimize time to find product 3) Minimize communication time 4) Minimize search time	Alpha = 0.875 Mean = 4.027 S.D. = 0.606
	Ordering Time 1) Minimize purchase time 2) Minimize processing time 3) Minimize payment time 4) Minimize time to order product	Alpha = 0.895 Mean = 4.050 S.D. = 0.656
Time to Receive Product	Minimize delivery time Minimize shipping time Minimize dispatch time	Alpha = 0.947 Mean = 4.046 S.D. = 0.761
Product Quality	Maximize product value Ensure quality of product Get the best product for the money Maximize functionality of purchased item	Alpha = 0.832 Mean = 4.269 S.D. = 0.563
Customer Satisfaction	I am satisfied with the quality of electronic commerce service I would like to recommend the service of electronic commerce service to others I will purchase some products again using electronic commerce	Alpha = 0.829 Mean = 3.631 S.D. = 0.544

All measures employ a five-point Likert scale from strongly disagree to strongly agree.

Alpha indicates Composite Reliability.

S.D. indicates Standard Deviation.

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