Value-Driven Internet Shopping: The Mental Accounting Theory Perspective

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ABSTRACT

When faced with competition and the ease with which customers can compare prices across sellers, Internet vendors often lower prices in a bid to increase sales. However, recent research reports that even price-sensitive customers do not always purchase from Internet vendors offering the lowest prices. In contrast, value has been considered a key motivator of customer decision making in economics and marketing. However, little is known about the role and effect of value in Internet shopping. This study examines online customer purchase decision making from the value perspective based on mental accounting theory. This study also identifies monetary (perceived price) and non-monetary (perceived risk, convenience, and pleasure) determinants of value. This study further explains how the individual determinants affect online purchase decision making directly and indirectly though value perception. The findings of this study offer Internet vendors practical suggestions for increasing online sales. This study, with its results, also helps advance knowledge of electronic commerce. © 2009 Wiley Periodicals, Inc.
One of the advantages of Internet shopping to customers is the ease of comparing prices. Internet shopbots in particular help customers compare prices offered by online stores and evaluate other store attributes. The ease of price comparison, however, works to the disadvantage of Internet vendors. With price information so readily available to customers, many vendors feel compelled to reduce prices to increase sales. The tendency of Internet vendors to reduce prices in the face of competition is not economically practical because it cuts into their profitability. Moreover, recent studies (e.g., Smith & Brynjolfsson, 2001) report that online sales do not necessarily increase when prices are reduced because even price-sensitive customers do not always purchase from vendors offering the lowest prices. Reputable vendors such as Amazon.com enjoy a significant price advantage over generic online stores selling similar products (Smith & Brynjolfsson, 2001). Rather than reducing prices, Internet vendors could look for other avenues to improve sales.

One of the ways to improve online sales is to understand how online customers make their purchase decisions. Customer choice and decision making has been studied from the value maximization perspective (Kahneman & Tversky, 1979; Zeithaml, 1988). That is, customers tend to maximize value in their choice and decision making. There are many studies that adopt value as a key predictor of customer purchase decision making (Bolton & Drew, 1991; Chang & Wildt, 1994; Chen & Dubinsky, 2003; Dodds, Monroe, & Grewel, 1991; Lee, Soutar, & Louviere, 2007; Pihlström & Brush, 2008; Zeithaml, 1988). However, most of them are set in the conventional shopping context and do not consider the role of risk and uncertainty (Chen & Dubinsky, 2003; Sinha & DeSarbo, 1998), whereas risk and uncertainty are important decision factors in Internet shopping. This study employs mental accounting theory (Thaler, 1985) because it can explain customer decision making under risk and uncertainty. Customer purchase decision making in the context of Internet shopping is further characterized by the value of product compared to price (i.e., acquisition utility) and the perceived merit as well as risks in the transaction (i.e., transaction utility). Mental accounting theory includes product acquisition and transaction-related attributes in explaining customer decision making. Mental accounting theory is therefore useful in examining online purchase decision making theoretically, especially in the context of Internet shopping.

The objective of this study is thus to examine value-driven online purchase decision making from the perspective of mental accounting theory. This study seeks to answer two research questions: (1) What are the factors that affect customer value perceptions about shopping from an online store? (2) How do value perception and other relevant factors affect the decision to purchase from an online store? The results should advance the theoretical understanding of online customer decision making and offer Internet vendors practical suggestions for increasing their online sales.

The rest of the paper is organized as follows: Section 2 develops a theoretical framework based on prospect theory and mental accounting theory. This is followed by the research model and hypotheses in Section 3. Research methodology and data analysis are discussed in Sections 4 and 5. Section 6 discusses the findings and their implications, and considers the limitations of this study, with suggestions for future research. This study concludes with a summary of the contributions.
THEORETICAL BACKGROUND

Previous Research on Value

Value has been studied for more than two decades in the fields of economics and marketing. In economics, value is equated with utility or desirability (e.g., Von Neumann & Morgenstern, 1953). In marketing, however, value is typically defined from the perspective of consumers. Zeithaml (1988) defines value in four different ways: (1) Value is low price, (2) value is whatever I want in a product, (3) value is the quality I get for the price I pay, and (4) value is what I get for what I give. Chen and Dubinsky (2003) conceptualize perceived value as the consumer’s overall assessment (i.e., net benefits) of a product based on what is received and what is given. Teas and Agarwal (2000) explain that perception of value is based on a trade-off between benefits and sacrifice. Similarly, Thaler (1985) defines value as net benefits as an overall assessment based on the comparison between benefits and sacrifices. Value thus conceptualizes the net benefits, benefits received against sacrifices in purchasing a product/service.

Table 1 summarizes previous research on value. Much emphasis is given to testing the antecedents and consequence of value in different contexts. Many benefit (e.g., quality) and cost (e.g., price) factors have been identified as the antecedents of value. However, empirical studies based on the benefit–sacrifice conceptualization are relatively few. Most studies (e.g., Chen & Dubinsky, 2003; Dodds, Monroe, & Grewal, 1991) also lack theoretical basis of value. Furthermore, there has been a lack of research on value in the context of Internet shopping. Therefore, this study turns to theories that explain customer value-driven behavior under conditions of risk and uncertainty, as these theories can shed light on customer-perceived value in the context of Internet shopping. Two such theories that attempt to explain customer value-driven behavior under conditions of risk and uncertainty are prospect theory (Kahneman and Tversky, 1979) and mental accounting theory (Thaler, 1985). Although there may be other perspectives that may also explain decision making under uncertainty, prospect theory and mental accounting theory seem to be better suited for this purpose. We now explain these theories in brief.

Prospect Theory

Prospect theory was developed by Kahneman and Tversky (1979) to predict behavior (why people behave the way they do) and not to characterize optimal behavior (as described by expected utility theory). It explains human decisions under conditions of uncertainty from a value maximization perspective. Kahneman and Tversky (1979) replaced the utility function of expected utility theory (Von Neumann & Morgenstern, 1953) with the value function. The carriers of expected utility theory’s (EUT) utility function are total assets or total wealth; that is, customer utility for a purchase is measured with reference to changes in total wealth. The carriers of prospect theory’s value function are, however, changes in wealth or welfare (characterized as gains or losses from a reference point) rather than final states. Kahneman and Tversky (1979) argued that prospect theory’s value function is richer than EUT’s utility function and that it provides a better approximation of customer decision making. This is because
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a decision maker’s perception is more attuned to the evaluation of changes or differences rather than the evaluation of absolute magnitudes (Helson, 1964). For example, when a decision maker responds to attributes such as brightness, loudness, or temperature, the past and present contexts of experience define an adaptation level or reference, and stimuli are perceived in relation to this reference. However, the emphasis on “change” as a carrier of value does not imply that the value of a particular change is independent of the initial position. Rather, value should be treated as a function in two arguments: the asset position that serves as a reference point and the magnitude of the change (positive or negative) from that reference point (Kahneman & Tversky, 1979).

According to prospect theory, customers maximize the value of their choice and decision making under conditions of uncertainty. Prospect theory further suggests that people put more weight on positive outcomes that are considered certain than positive outcomes that are deemed merely probable. This effect, known as the certainty effect, causes people to be risk averse (i.e., people tend to opt for smaller but certain gains rather than larger but probable gains) when making decisions involving gains. Kahneman and Tversky (1979) described risk aversion as the best-known generalization about risky choices involving gains. In addition, people generally discard components that are shared by all prospects under consideration. This tendency, called the isolation effect, leads to inconsistent preferences when the same choice is presented in different forms.

**Mental Accounting Theory**

Thaler (1985) proposed mental accounting theory based on prospect theory. As an enhancement of prospect theory, mental accounting theory incorporates compound outcomes, whereas prospect theory’s value function is defined only over a single unidimensional outcome. Since Internet shopping decisions could be affected by more than one decision factor (such as price, risk, convenience), mental accounting theory seems better suited for studying online shopping decision making, although other perspectives may also apply. Now we will discuss mental accounting theory in more detail.

According to mental accounting theory, customers analyze transactions in two stages: evaluating potential transactions (judgment process) and approving or disapproving each potential transaction (decision process). For evaluating potential transactions, Thaler (1985) proposed two types of utility: 1 acquisition utility and transaction utility. Acquisition utility is the value of the goods received compared to the outlay (Thaler, 1985). It is a function of the equivalent value of the product and its objective price (Thaler, 1985). Equivalent value refers to the amount of money that would leave the individual indifferent between receiving the cash or the product as a gift. Objective price is the total amount that a customer has to pay to receive/use the product. Transaction utility refers to the perceived merits of the transaction or deal. It is based on the difference between the objective price and the reference price of the product. Reference price refers to the price that a customer expects to pay for the product (Thaler, 1985). Customers derive reference price from their previous experiences or the sales

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1 Thaler (1985) uses the term “utility” instead of value. However, the meaning of utility is the same as value in prospect theory (Kahneman & Tversky, 1979). This study will henceforth use the terms utility and value interchangeably.
messages they receive (Puto, 1987). Internet shopbots that compare prices offered by different Internet vendors also help customers derive reference prices. Total utility from a purchase is the sum of acquisition utility and transaction utility (Thaler, 1985).

For making purchase decisions, customers make decisions to maximize their total utility with reference to the mental account corresponding to the product being purchased (Thaler, 1985). The specific mental account is restricted by the budget allocated to that mental account.

**Acquisition Utility and Transaction Utility**

In Internet shopping, the ultimate consumption of a product from any online store would be the same. The equivalent value of the product, therefore, would be the same regardless of the online store it is purchased from. Acquisition utility may, however, be different as prices may vary between different online stores. This price difference between online stores is captured by acquisition utility and transaction utility alike, if the same product is purchased from different online stores. Although it is theoretically possible to distinguish between acquisition utility and transaction utility, it is conceptually and empirically difficult to make this distinction because of the overlap in their roles through objective price (Grewal, Monroe, & Krishnan, 1998). Therefore, many previous studies (Dodds, Monroe, & Grewal, 1991; Thaler, 1985) have conceptualized acquisition utility as similar to total utility. For the same reason of empirical and conceptual feasibility, this study measures only transaction utility and total utility, not acquisition utility.

**Determinants of Value-Driven Internet Shopping**

Because this study is more concerned with examining online customers’ intention of transacting with an online store rather than the intention of purchasing a specific product, this study will measure transaction utility and total utility with reference to a specific online store rather than for any individual product. Previous research (e.g., Dodds, Monroe, & Grewal, 1991; Grewal, Monroe, & Krishnan, 1998; Urbany et al., 1997; Volckner, 2008) has focused mainly on the monetary aspect of transaction utility, measured as the difference between the objective price and the customer’s reference price. Non-monetary aspects (e.g., time, effort, and risk) of transaction utility also may be critical to customer purchase decision making at an online store (Zeithaml, 1988). While saving time and effort are the main benefits of shopping online (Torkzadeh & Dhillon, 2002), risk and uncertainty reduce the attractiveness of purchasing online, as customer deception by Internet vendors is becoming increasingly common (Grewal et al., 2003). Therefore, this study measures transaction utility from both monetary and non-monetary perspectives.

From the monetary perspective, this study considers perceived price as representing the difference between objective price and reference price at an online store (Gurumurthy & Russell, 1995). This study defines perceived price as the perceived level of (monetary) price at a vendor (i.e., objective price) in comparison with the customer’s reference price. In practice, customers do not usually remember the actual price of a shopping object (Zeithaml, 1988). Instead, they mentally encode prices in ways that are meaningful to them, such as being higher or lower than their reference price (Dodds, Monroe, & Grewal, 1991).
Perceived price would affect the monetary aspect of transaction utility and hence total utility of online purchase decision making at the focal Internet store.

From the non-monetary perspective, this study considers perceived risk (to represent risk and uncertainty in Internet shopping at an online store) and convenience (to represent time and effort in Internet shopping at an online store). Previous research (Cox, 1967) conceptualized perceived risk as involving uncertainty and consequences. Perceived risk also represents the subjective expectation of a loss or sacrifice in conducting transactions with an Internet vendor (Sweeney, Soutar, & Johnson, 1999). Cho (2006) asserts that risk arises when Web retailers behave in an opportunistic manner. Following previous research, this study defines perceived risk as a customer's perception of the uncertainty and adverse consequences of conducting transactions with a vendor. Perceived risk would affect the non-monetary aspect of transaction utility and then online purchase decision making at the focal online store.

Using the conceptualization of convenience as proposed by Berry, Seiders, and Grewal (2002), this study defines convenience as a customer's perception of time and effort saved by shopping at an online store. Online stores may differ in various aspects of convenience in shopping-related activities such as search, product information, ordering, payments, and delivery (Kaufman-Scarborough & Lindquist, 2002). For the same product, customers would prefer those online stores that provide greater convenience. This difference in convenience would affect the non-monetary aspect of transaction utility and online purchase decision making at the focal online store.

Moreover, Web consumption behavior has two domains—cognitive and hedonic (Chitturi, Raghunathan, & Mahajan, 2008; Hartman et al., 2006), customers' intrinsic (hedonic) motivation of shopping may also influence the non-monetary aspect of transaction utility in the online shopping context (Deci, 1975) and customer behavior (Kidwell, Hardesty, & Childers, 2008; Soscia, 2007). Intrinsic motivation refers to the performance of an activity for no apparent reinforcement other than the process of performing the activity per se (Deci, 1975). Customers derive psychological satisfaction or pleasure from taking advantage of the financial terms of the deal, which in turn increases the total utility (Grewal, Monroe, & Krishnan, 1998). Consumption emotion refers to a set of emotional responses elicited specifically during product usage or consumption experiences. Among the subtypes of consumption emotion, previous research (Donovan et al., 1994; Mehrabian & Russell, 1974) identified pleasure as one of the major subtypes in motivating human behavior and decision making. Pleasure refers to the degree to which a person feels good, joyful, happy, or satisfied in the situation (Mehrabian & Russell, 1974). Following previous research (Mehrabian & Russell, 1974), this study defines pleasure as the degree to which a customer feels good or happy with the transactions made with the online store. Therefore, in addition to cognitive domain as represented by mental accounting theory, this study also considers the hedonic domain of decision making as represented by pleasure derived in making purchases from an online store.

**Mental Assessment of Attributes That Influence Internet Shopping**

The evaluation and decision-making processes are affected by the manner in which the customer assesses the attributes of a transaction (Thaler, 1985).
According to mental accounting theory, these factors can be assessed either jointly (integration) or separately (segregation).

Thaler (1985) classified customer choice into four types, and proposed the preferred evaluation approach. The four types of customer choice (and preferred evaluation approach) are: (1) multiple gains (segregation), (2) multiple losses (integration), (3) larger gains and smaller losses (integration), and (4) smaller gains and larger losses (segregation). As purchasing in the frame of loss is not expected (Von Neumann & Morgenstern, 1953), customers would make their purchases only when they have all gains or larger gains on some attributes and smaller losses on other attributes. They will prefer segregation when all the attributes are favorable (gain frame) for decision making. They will prefer integration when the overall magnitude of mixed unfavorable (loss frame) and favorable attributes (gain frame) is favorable for decision making.

The implication of the above discussion is that when customers make purchase decisions based on segregation of attributes, the decision factors (perceived price, perceived risk, convenience, and pleasure) would directly influence customer purchase intention. And when customers make purchase decisions based on integration of attributes, the decision factors (perceived price, perceived risk, convenience, and pleasure) would influence customer purchase intention indirectly through perceived value.

In summary, mental accounting theory provides theoretical support mainly for three things, namely: How does value lead to decision making? What factors affect the value? and How is value assessed by people?

**RESEARCH MODEL AND HYPOTHESES**

**Research Model**

Based on the preceding discussion, this study proposes the research model presented in Figure 1, which shows two stages in transaction analysis as proposed by Thaler (1985). The judgment stage consists of the four components of transaction utility: perceived price, perceived risk, convenience, and pleasure. The overall evaluation of an Internet transaction with a focal online store represents

![Figure 1. Research model.](image-url)
perceived value as total utility. Based on previous research (Kahneman & Tversky, 1979; Thaler, 1985; Zeithaml, 1988), this study defines perceived value as the net benefits (perceived benefits relative to perceived sacrifices) of a transaction with an online store. The decision-making stage consists of making a purchase decision based on the total utility, subject to the budget constraints allocated to a specific mental account. This study does not measure budgetary constraints, as they would be the same across online stores for a similar product. Moreover, it is empirically not feasible to characterize them in a model, as they are specific to each situation and hence quite variable. This study also includes the influence of individual components of transaction utility on purchase intention, as customers might make decisions based on segregated evaluation, when all the attributes are in the frame of gain. In such cases, customer assessment of individual components would lead directly to decision making.

Much previous research on value (e.g., Chen & Dubinsky, 2003; Dodds, Monroe, & Grewal, 1991; Zeithaml, 1988) lacks theoretical background about the influence of perceived value on purchase intention. Rather, the relationship between perceived value and purchase intention is largely based on the price–quality or benefit–sacrifice conceptualization. However, this research adopts mental accounting theory, which provides a theoretical basis for this relationship. According to mental accounting theory, customers evaluate different prospects based on the value of each prospect relative to some reference and the degree of risk involved in choosing that prospect. Past studies on consumer decision making (Kahneman & Tversky, 1979; Thaler, 1985; Zeithaml, 1988) also share the assumption that customers seek value maximization. Customers prefer to conduct transactions with vendors whose products (including services) offer maximal value. Furthermore, customers make their purchase decisions based on maximum value at the decision-making stage. Empirical results (Dodds, Monroe, & Grewal, 1991; Zeithaml, 1988) also support the idea that perceived value leads to purchase intention. Hence, this study hypothesizes:

**H1:** Perceived value positively influences purchase intention for online customers.

According to mental accounting theory, perceived price impacts the monetary dimension of transaction utility. An increase in perceived price implies monetary loss, which lowers transaction utility. By lowering the monetary aspect of transaction utility, the perceived price would lower the perceived value. However, perceived price can also act as a signal for store quality. For example, an online store selling at exceptionally low prices may be branded as a fake store, while a store selling at high prices may be branded as a premium store. However, in online shopping, most of the products (such as books and CDs), being low touch in nature (EIAA, 2006), are comparable across stores, and customers are generally familiar with the product attributes. Therefore, the major role played by perceived price in online shopping is the sacrifice on the part of customer for purchasing online. Previous research (Dodds, Monroe, & Grewal, 1991) also supports the idea that the perceived price is negatively related to the perceived value of a transaction. Hence, customers of Internet vendors more often consider price to be a monetary sacrifice (Reibstein, 2002). Hence, this study hypothesizes:

**H2:** Perceived price negatively influences perceived value for online customers.
In addition to the indirect effect of perceived price on purchase intention through perceived value, perceived price also may exert a direct effect on purchase intention through segregated evaluation. According to mental accounting theory, customers make choices based on segregated evaluation of attributes in the frame of multiple gains. Perceived price in the frame of gain means that the prices in the online store are lower than the customer’s reference price (Dodds, Monroe, & Grewal, 1991). In such a case, perceived price may have a direct effect on purchase intention. Risk-averse customers also tend to minimize expenses or “losses” that are certain (Kahneman & Tversky, 1979). In such a situation, customers discount the available information and opt for low price to minimize immediate expenses or financial loss (Kahneman & Tversky, 1979; Tellis & Gaeth, 1990). Previous research (Dodds, Monroe, & Grewal, 1991; Monroe & Chapman, 1987) supports the idea that price perception affects purchase intention. Hence, this study hypothesizes:

**H3:** Perceived price negatively influences purchase intention for online customers.

An increase in perceived risk implies lowering the non-monetary aspect of transaction utility. As transaction utility is a direct determinant of total utility, the perceived risk of Internet shopping at an online store should negatively affect the perceived value. It is the presence of risks in Internet shopping at a focal store that makes seemingly attractive deals (such as low-priced offerings) unattractive. Once the perceived risks associated with selling online at a focal store are reduced, customers develop a favorable value perception about purchasing from the focal online store (Cho, 2006). The negative effect of perceived risk on perceived value has been supported by previous research (Jarvenpaa & Tractinsky, 1999). Hence, this study hypothesizes:

**H4:** Perceived risk negatively influences perceived value for online customers.

In the frame of gain, perceived risk also may have a direct influence on purchase intention through segregated evaluation. Perceived risk in the frame of gain means customers perceive low risk in conducting transactions with the online store. Customers feel more comfortable making purchase transactions with an online store that is perceived to be less risky. Therefore, lower perceived risk should encourage customers to decide on making a transaction based on segregated evaluation when other attributes of the transaction are also in the frame of gain. In addition, customers exhibit risk aversion behavior in situations of high uncertainty and risk, and are motivated to minimize the expected negative consequences of purchases (Kahneman & Tversky, 1979). Previous research (Hoffman, Novak, & Peralta, 1999; Jarvenpaa & Todd, 1996) also posited that customers are less willing to make actual purchases under conditions of high risk and uncertainty. Park, Lennon, and Stoel (2005) suggest that lower confidence (an inverse of perceived risk) inhibits customers from making purchases from the online store. Once the perceived risks associated with an online service are reduced, customers are more willing to engage in transactions (Cho, 2006). Hence, this study hypothesizes:

**H5:** Perceived risk negatively influences purchase intention for online customers.
Convenience is one of the most important benefits of Internet shopping (Jarvenpaa & Todd, 1996). Shopping on the Internet provides convenience in various ways (Berry, Seiders, & Grewal, 2002) related to aspects of a Web site, such as the ease of conducting searches, the provision of different methods to make payment, and the offer of flexible delivery options (Kaufmann-Scarborough & Lindquist, 2002; Yi & Gong, 2008). According to mental accounting theory, greater convenience means less mental and physical energy expended in obtaining a product, which reduces the time and effort (non-monetary aspects of transaction utility), thereby increasing transaction utility (Eggert & Ulaga, 2002). By enhancing transaction utility, convenience would influence customers’ perceived value of Internet shopping at a focal store. Hence, this study hypothesizes:

**H6:** Convenience positively influences perceived value for online customers.

Convenience also may have a direct influence on purchase intention through segregated evaluation. When all attributes are in the frame of gain, customers would opt for segregated evaluation of attributes when making purchase decisions. Convenience would be in the frame of gain when the current online store is perceived to be more convenient than other online stores. In such cases, customers would be inclined to make purchases from the current online store. It is also known that customer shopping behavior is enhanced by efficiency in consumption (Eggert & Ulaga, 2002). Particularly for low-cost standardized items, customers would regard time as more important than money (Eggert & Ulaga, 2002). As convenience represents customer time-and-effort perceptions about shopping on the Internet, customers would be motivated to make purchase decisions based on time savings and reduced hassles, especially for routine items. According to Teo and Yu (2005), customers’ time and effort costs influence their willingness to purchase from an online store. Previous research (Fenech & O’Cass, 2001; Keeney, 1999) also supports the notion that convenience is associated with online purchases. Hence, this study hypothesizes:

**H7:** Convenience positively influences purchase intention for online customers.

Apart from the cognitive basis of decision making, hedonic aspects of decision making may also influence online customer purchase decisions. Some customers may purchase online for the sake of fun or the pleasure derived in doing so. Research in affective processing mechanisms posits that the emotions elicited during consumption experiences leave strong traces or markers in a customer’s episodic memory (Cohen & Areni, 1991). The memory elements are believed to be highly accessible to current cognitive operations. When an evaluation of the relevant consumption experience (or its associated product or service) is required, the affective traces are readily retrieved and their variances are integrated into the evaluative judgment. Hedonic (affective) sources of value have long been recognized as affecting customer perceived value (Sweeney & Soutar, 2001). Thus, pleasure, as an emotional response to purchases made from a focal Internet vendor, would influence a customer’s perceived value of Internet shopping at the vendor. Hence, this study hypothesizes:

**H8:** Pleasure positively influences perceived value for online customers.
Pleasure also may have a direct influence on purchase intention through segregated evaluation. Pleasure would be in the frame of gain when the customers’ previous transactions made with the current online store are perceived to be pleasurable. In other words, the customer feels happy in conducting transactions with the online store. When all attributes are in the frame of gain, customers would opt for segregated evaluation of attributes when making purchase decisions. In such cases, the pleasure of purchasing from the current online vendor would influence purchase intention. In addition, coping responses are important mechanisms for inferring action and goal attainment from feelings (Lazarus, 1991). Depending on the feelings generated, behavioral intentions emerge to activate plans for the avoidance of undesirable outcomes or the increase/maintenance of positive outcomes (Bagozzi, 1992). Being a positive affect, pleasure would result in actions to savor the experience longer and increase the rewards. Consumers experiencing pleasure in shopping with an online vendor would be encouraged to return and shop at the vendor’s Web site again. Previous research also demonstrates the link between pleasure and purchase intentions (Bagozzi, Gopinath, & Nyer, 1999; Sherman, Mathur, & Smith, 1997; Fiore, Jin, & Kim, 2005). Hence, this study hypothesizes:

**H9:** Pleasure positively influences purchase intention for online customers.

**RESEARCH METHODOLOGY**

**Instrument Development**

This study developed the survey instrument by adopting existing validated questions wherever possible. Some items were self-developed for a more accurate fit between the instrument and the context of this study. Items for perceived value were adapted from Sirdeshmukh, Singh, and Sabol (2002), with an additional item on risk included for completeness in the measure. Sirdeshmukh, Singh, and Sabol (2002) measure value as a comparison between benefits and sacrifices (e.g., “For the time you spent in order to travel with this airline, would you say traveling on this airline is . . .?” and “For the effort involved in traveling with this airline, would you say traveling on this airline is . . .?”)

Such a comparison between benefits and sacrifices for measuring perceived value may raise concerns, as the factors that influence value also seem to be the components of value. However, the attempt to measure perceived value in this study is consistent with previous research. Chen and Dubinsky (2003) identified perceived risk and price as the antecedents of perceived value in their conceptual model. Sweeney, Soutar, and Johnson (1997) identified product quality, service quality, and price as the antecedents of value in purchasing electrical appliances at appliance stores. Zeithaml (1988) posited perceived sacrifice as an antecedent of perceived value in her conceptual model. Dodds, Monroe, and Grewal (1991) explain that perceived quality and perceived sacrifice are the antecedents of perceived value in purchasing a product at a store. Teas and Agarwal (2000) identified perceived product quality and perceived sacrifice as the antecedents of perceived value in purchasing a product. Baker et al. (2002) identified quality perception, price perception, and cost perception as the antecedents of value perception in assessing a retail outlet. This study refers to...
a few studies that conceptualize value in terms of comparison between benefits and sacrifices and yet measure their antecedents. For example, Grewal, Monroe, and Krishnan (1998) measure acquisition value in terms of the following items, which depict a comparison between price and worth: “I feel that I am getting a good quality bicycle for a reasonable value” and “I think that given this bicycle’s features, it is good value for the money.” However, at the same time, they do measure internal reference price as an antecedent of value.

Items for purchase intention and perceived risk were adopted from Dodds, Monroe, and Grewal (1991) and Cheung and Lee (2001), respectively. Items for convenience were adapted from Torkzadeh and Dhillon (2002) and Childers et al. (2001). Items for pleasure were adopted from Holbrook et al. (1984). Since customers form their perceptions of price by comparing actual prices with their reference prices (Dodds, Monroe, & Grewal, 1991), this study developed items for perceived price that allowed customers to make such comparisons using the prices of other bookstores as references. This study measured the variables on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). Three researchers reviewed the survey instrument along with the definitions of constructs for the face validity. Next, the measurement instrument was reviewed in a focus group of 10 online customers to check for any ambiguity in wording or format. The final list of items for each construct is shown in Table 3.

Data Collection

Most leading product categories in Internet shopping involve low-touch products and no-touch services (EIAA, 2006). This study chose an Internet bookstore because books belong to the category of low-touch products and vary little in quality (a possible confounding factor that could affect results) as compared to other products. The chosen Internet bookstore has about 144,000 visits to its Web site every day and sells about 18,000 books daily.

The empirical data were collected from actual online customers of the bookstore over a period of 10 days. The survey with a banner was publicized at the bookstore’s Web site, and respondents accessed the survey Web site from the store’s home page. To ensure that customers actually browsed the Web site, they were asked to note a book of their interest and its price before they proceeded to answer the questions.

This study collected 810 valid responses via the Internet survey. Table 2 shows the demographic characteristics of the online customers. Nonresponse bias was assessed with the comparison of the online customer sample against the registered online customer database of the Internet bookstore; t-tests show that the sample

<table>
<thead>
<tr>
<th>Demographic Variable</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>Mean (std. dev.)</td>
</tr>
<tr>
<td>Internet usage experience (years)</td>
<td>Mean (std. dev.)</td>
</tr>
<tr>
<td>Transaction experience with the bookstore (times)</td>
<td>Mean (std. dev.)</td>
</tr>
<tr>
<td>Gender</td>
<td>Female</td>
</tr>
<tr>
<td></td>
<td>Male</td>
</tr>
<tr>
<td>Number of responses</td>
<td></td>
</tr>
</tbody>
</table>
Table 3. Measurement Instrument.

<table>
<thead>
<tr>
<th>Const.</th>
<th>Item</th>
<th>Wording</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchase</td>
<td>PINT1</td>
<td>If I were to buy a book, I would consider buying it from this store.</td>
<td>Dodds, Monroe, and Grewel (1991)</td>
</tr>
<tr>
<td>Intention</td>
<td>PINT2</td>
<td>The likelihood of my purchasing a book from this store is high.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PINT3</td>
<td>My willingness to buy a book from this store is high.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PINT4</td>
<td>The probability that I would consider buying a book from this store is high.</td>
<td></td>
</tr>
<tr>
<td>Perceived</td>
<td>PVAL1</td>
<td>Considering the time and effort I spend on buying books at this store, Internet shopping here is worthwhile.</td>
<td>Sirdeshmukh, Singh, and Sabol (2002)</td>
</tr>
<tr>
<td>Value</td>
<td>PVAL2</td>
<td>Considering the risk I take in buying books at this store, Internet shopping here has value.</td>
<td>Self-developed</td>
</tr>
<tr>
<td></td>
<td>PVAL3</td>
<td>Considering the money I pay for buying books at this store, Internet shopping here is a good deal.</td>
<td>Sirdeshmukh, Singh, and Sabol (2002)</td>
</tr>
<tr>
<td></td>
<td>PVAL4</td>
<td>Considering all monetary and non-monetary costs I incur in buying books at this store, Internet shopping here is of good value.</td>
<td>Self-developed</td>
</tr>
<tr>
<td>Perceived</td>
<td>PRCE1</td>
<td>It may be possible to get a better discount from another online store.</td>
<td>Self-developed</td>
</tr>
<tr>
<td>Price</td>
<td>PRCE2</td>
<td>It may be cheaper to buy books at another online store.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PRCE3</td>
<td>I will probably save more money buying books at another online store.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PRCE4</td>
<td>I may need to pay more money buying books at this store than at another online store.</td>
<td></td>
</tr>
<tr>
<td>Perceived</td>
<td>RISK1</td>
<td>Internet shopping at this store involves significant uncertainty.</td>
<td>Cheung and Lee (2001)</td>
</tr>
<tr>
<td>Risk</td>
<td>RISK2</td>
<td>There is a significant chance of loss in Internet shopping at this store.</td>
<td>Gefen and Devine (2001)</td>
</tr>
<tr>
<td></td>
<td>RISK3</td>
<td>There would be negative outcomes in Internet shopping at this store.</td>
<td>Cheung and Lee (2001)</td>
</tr>
<tr>
<td></td>
<td>RISK4</td>
<td>My credit card and personal information may not be secure with this store.</td>
<td>Gefen and Devine (2001)</td>
</tr>
<tr>
<td>Convenience</td>
<td>CONV1</td>
<td>Internet shopping at this store saves me time.</td>
<td>Childers et al. (2001); Torkzadeh and Dhillon (2002)</td>
</tr>
<tr>
<td></td>
<td>CONV2</td>
<td>Internet shopping at this store minimizes my effort in shopping.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CONV3</td>
<td>Internet shopping at this store is easy for me.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CONV4</td>
<td>Internet shopping at this store minimizes personal hassle in shopping.</td>
<td></td>
</tr>
<tr>
<td>Pleasure</td>
<td>PLEA1</td>
<td>How do you feel about your previous transaction with this store?</td>
<td>Holbrook et al. (1984)</td>
</tr>
<tr>
<td></td>
<td>PLEA2</td>
<td>Unsatisfied/Satisfied</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PLEA3</td>
<td>Unhappy/Happy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PLEA4</td>
<td>Annoyed/Pleased</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PLEA5</td>
<td>Disappointed/Delighted</td>
<td></td>
</tr>
</tbody>
</table>
of online customers and the population of registered online customers did not differ significantly in terms of age and purchase experience with the bookstore. A Mann–Whitney test revealed no significant difference in gender ratio between the sample of online customers and the population of registered online customers.

**DATA ANALYSIS AND RESULTS**

**Confirmatory Factor Analysis**

First, this study checked for unidimensionality. Unidimensionality means that for each measurement item, there should be one and only one underlying construct; that is, the variance shared by items is not related to an unspecified latent variable. Following standard LISREL methodology (Anderson & Gerbing, 1988), the measurement model was revised by discarding, one at a time, items that shared a high degree of residual variance with other items (Gefen, Straub, & Boudreau, 2000). The test results indicated that the second item, perceived price (PRCE2), violated unidimensionality, and discarding it would reduce $\chi^2$ (chi-square) significantly. Therefore, PRCE2 was dropped. Other items were not dropped as the error covariance between a pair of items resulted in little change in $\chi^2$ ($<20$), thus preventing overfitting. After dropping PRCE2, the CFA showed good fit.

Next, this study assessed the convergent validity and discriminant validity of the constructs. They were assessed on the following criteria: (1) Individual item lambda coefficients should be greater than 0.70, and each path loading should be greater than twice its standard error. (2) A significant $t$-statistic should be obtained for each path (standardized path loadings that are indicators of the degree of association between the underlying latent factor and each item should be significant) (Gefen, Straub, & Boudreau, 2000). (3) The composite reliabilities (CR) for each construct should be greater than 0.7. (4) The average variance extracted (AVE) for each factor must exceed 50 percent (Fornell & Larcker, 1981). As shown in Table 4, all standardized path coefficients (except PRCE1 and RISK4) were greater than 0.7. The individual path loadings were all greater than twice their standard error. The $t$-statistic was significant for all the items. The CR for each construct was greater than 0.7, and the AVE for each construct was greater than 0.5. Thus, convergent validity was adequately established.

Discriminant validity is assessed with the comparison of the average variance extracted for each construct with the squared correlations between that construct and other constructs (Fornell & Larcker, 1981). As shown in Table 5, the average variance extracted for each construct exceeded the squared correlations between that construct and others. Hence, the constructs used in this study had discriminant validity. Discriminant validity was also assessed using a process of constrained confirmatory factor analysis, as suggested by Anderson and Gerbing (1988). For every pair of constructs, this study tested the fit of a free model with all items loaded on the intended construct and the fit of a constraint model with all items for each pair loading on a single factor. If the model fit degenerated significantly, then the discriminant validity was considered satisfactory. Using this process, all $\chi^2$ differences between every pair of constructs were significant and each original model had a better model fit compared to its corresponding constrained model, indicating that the measurement model was significantly better than other alternative models. Hence, discriminant validity was established.
Hypothesis Testing

This study applied the following indices and standards to assess model fit following Hair et al. (1998): normed $\chi^2$ lower than 3.0, goodness-of-fit index (GFI) and normed fit index (NFI) greater than 0.90, adjusted goodness-of-fit index (AGFI) greater than 0.80, comparative fit index (CFI) greater than 0.90, and root mean square of approximation (RMSEA) lower than 0.08.

The structural model had good fit indices (see Figure 2). With this result, the standardized path coefficients could be used for testing the hypotheses. Perceived price, perceived risk, convenience, and pleasure significantly influenced perceived value, explaining 57 percent of variance in perceived value. Convenience, pleasure, perceived price, and perceived value significantly influenced purchase intention, explaining 42 percent of variance in purchase intention.
However, perceived risk was insignificant in relation to purchase intention. Hence, all hypotheses were supported except H5.

**DISCUSSION AND IMPLICATIONS**

**Discussion of Findings**

The results of this study using mental accounting theory reveal some interesting findings. First, the results show that apart from monetary factors (i.e., perceived price), non-monetary factors also influence online customer value perceptions. Non-monetary factors include time and effort savings (convenience) as well as risk and uncertainty (perceived risk). Furthermore, the results indicate that pleasure from previous transactions also influences customers’ value perceptions, as customers often are motivated to make purchase decisions based on intrinsic factors.

Second, this study found that customers’ value perception of Internet shopping influences their decision to purchase from an Internet vendor. Moreover, apart from value perceptions, the intention to purchase from the Internet vendor is significantly influenced by three determinants (convenience, pleasure, and perceived price) of transaction utility when customers make purchase decisions through segregated evaluation. Apart from the integrated evaluation of attributes through perceived value, online customers also take into account individual determinants of value when making decisions on purchasing from an Internet vendor.

Third, the results of this study also reveal that perceived risk did not have a significant influence on purchase intention. The results of this study are apparently contradictory to some of the findings of previous studies (e.g., Hoffman, Novak, & Peralta, 1999; Jarvenpaa & Todd, 1996) positing that perceived risk is a major barrier to Internet transactions. However, we do not rule out the possibility of risk being a major barrier to Internet transactions. The apparent contradiction may be due to the prior Internet shopping experience of all online customers in this study. Many of the respondents in this study had also made purchases from the same online store, which would alleviate their concerns.
about risk and uncertainty (perceived risk: Mean = 2.41, SD = 1.01). Looking beyond the role of Internet experience, the results of this study reveal that the effect of perceived risk on purchase intention could be insignificant because of the mediating role of perceived value.

**Theoretical Implications**

This research also contributes to theoretical foundations. In this study we have used mental accounting theory as the basis for studying customer behavior. Although the concept of value is complex and multidimensional, and varies from discipline to discipline, it is fundamentally seen as net gain (total benefits received less total costs incurred) in a transaction (Zeithaml, 1988). While many studies in the traditional context have used the concept of value (either price/quality or cost/benefit) for studying customer behavior, traditional studies using the concept of value do not consider the risk and uncertainty that influence customer judgment and decision making in Internet shopping. The use of mental accounting theory has therefore resulted in a deeper understanding of Internet shopping.

Second, using mental accounting theory, this study has identified factors other than price that influence the value of Internet shopping and customer online purchase decision making. Many studies focus either on price (e.g., Dodds, Monroe, & Grewal, 1991) or risk (e.g., Jarvenpaa & Todd, 1996) separately. However, this study reveals that using price and risk together can give a deeper understanding of customer online purchase decision making. Also, factors other than price and risk may also influence customers’ transaction utility, as customers do not always purchase from stores with the lowest prices (Smith & Brynjolfsson, 2001). This study has proposed non-monetary factors (convenience, pleasure, and perceived risk) that could influence customer value perception, and found all of them to be significant predictors of perceived value in Internet shopping. This study reveals a better understanding of Internet shopping using non-monetary factors (except perceived risk) in conjunction with monetary factors for studying customer online purchase decision making.

Third, this study provides empirical support for the concept of transaction utility. One important issue is why customers prefer certain online stores over others when the ultimate consumption utility derived from product consumption across various online stores is the same. Mental accounting theory helps deepen our understanding on this issue. It is because the perceived merits of the deal or the transaction utility of Internet shopping differ across stores. This study found empirical support for the influence of components of transaction utility on perceived value of Internet shopping. Most previous studies (e.g., Chen & Dubinsky, 2003; Sweeney & Soutar, 2001) focus on the role of value in customer choice and decision making. However, using mental accounting theory introduces the role of transaction utility in customer choice and decision making, thus deepening our understanding of online customer decision making.

Fourth, this study has examined the role of affect in customer value perception and online purchase decision making at an Internet store. This study used pleasure to represent customer intrinsic (hedonic) motivation, as it had been identified as representing a variety of emotions (Oliver, 1997). This study shows that pleasurable emotion is important in the Internet shopping context; it can enhance the perceived value of shopping at an online store and thus increase purchase intention.
Practical Implications

From the practice perspective, this study shows where Internet vendors should expend effort to increase sales. Indeed, competition and the failure of price-oriented sales strategies make it necessary for Internet vendors to find other ways to boost sales. This study affirms earlier suggestions that value is the source of a vendor’s competitive advantage (Woodruff, 1997) by finding that value is a key determinant of customer purchase decision making at an online store. Hence, Internet vendors should invest in efforts to enhance the value of Internet transactions as perceived by customers.

This study suggests that Internet vendors can enhance value from both monetary and non-monetary perspectives. Regarding the non-monetary perceptive, an Internet vendor should aim to enhance convenience and pleasure, and lower the perception of risk. To enhance convenience, Internet vendors could offer speedy delivery of products, easy payment options, easy returns, contact information, and round-the-clock availability of information through call centers.

To enhance pleasure, an Internet vendor should provide customers with enjoyable and satisfying transaction experiences. Indeed, emotion marketing advocates (Robinette, 2001) posit that emotion wins customer loyalty. In line with that observation, Internet vendors may pursue a number of options, because customer pleasure arises from a variety of factors such as content, service, and customization. For example, the Web site of Land’s End (www.landsend.com) has a special feature allowing customers to design their own model and purchase custom-fit garments. This increases the hedonic worth of purchasing from the Web site.

To lower risk, Internet vendors should invest in efforts that can enhance their trustworthiness as perceived by customers. Examples of such efforts include publicizing customer testimonies, deploying reliable product delivery systems, offering generous product return policies, and providing good after-sales service through customer hotlines. If the online store is a click-and-brick store, the vendor can leverage its offline brand.

Limitations and Future Research

The results of this study must be interpreted in the context of its limitations. First, the data for this study were collected from the customers of a single Internet bookstore. It would be useful to replicate this study with a number of Internet vendors in different product categories so that the robustness of the results can be established. Second, this study considered only transaction utility and total utility in examining customer purchase decision making. However, the influence of acquisition utility may be important for products that vary greatly in quality. Future studies may extend the research model by including components of acquisition utility for examining customer purchase decision making for products that vary greatly in quality.

CONCLUSIONS

This study examines online purchase decision making at an online store from the value perspective based on mental accounting theory. Going beyond prior research, it identifies what monetary (perceived price) and non-monetary (convenience, pleasure, and perceived risk) factors affect the customer perception
of value in the context of Internet shopping, which is characterized by risks and uncertainty. Furthermore, this study explains how the identified factors affect customer decisions about shopping at an Internet store directly and indirectly through perceived value. The findings of this study offer Internet vendors practical suggestions for increasing their online sales. This study, together with the results, also helps advance knowledge of electronic commerce. Although there are limits to generalizing the findings in this study, EIAA (2006) found that seven products among the top ten products sold online belong to a search product category and four products (cinema tickets, CDs, DVDs, and books) among them have characteristics similar to book products (i.e., low/medium price, standard product, and no-touch services required). Therefore, the findings in this study can be applied to other popular Internet shopping contexts.

REFERENCES


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