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# An Overall Purchasing Process Model of Internet Buyers: The Role of Regret in Electronic Commerce

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## ABSTRACT

This study focuses on the antecedents and consequences of Internet buyer regret in the overall purchasing process. We examine the roles that search effort, service-attribute evaluations, product-attribute evaluations and post-purchase price perceptions play in determining buyer regret and satisfaction in e-commerce. Furthermore, the study examines the consequences of regret and satisfaction in regard to purchasing intention. Survey data collected from 422 respondents were analyzed using structural equation modeling (SEM) with partial least squares (PLS-Graph 3.0) and support provided for the hypothesized links. These results show that greater search effort and lower evaluations of service, product and price lead to greater buyer regret and dissatisfaction; the consequences of regret include reduced satisfaction and less intention to repurchase. Based on the results, implications for online retailers, as well as suggestions for future research relating to Internet buyer regret, are discussed.

## Keywords

E-commerce, regret, satisfaction, online shopping

## INTRODUCTION

Regret has been defined as “the negative, cognitively based emotion that we experience when realizing or imagining that our present situation would have been better had we acted differently” (Zeelenberg, 1999, p.326). It is experienced after the wrong choice has been made and is a result of bad decisions and disconfirmed expectancies (Zeelenberg and Pieters, 1999; Zeelenberg and Pieters, 2004). The antecedents and consequences of regret in the field of electronic commerce are less well known, so the goal of this study is to understand them.

As competition increases, e-vendors are increasingly focusing their strategic efforts on customer retention. Therefore, understanding why customers are willing to repurchase from the same B2C website has become an increasingly important issue for academics and companies. A key component in any customer repurchase intention program is satisfaction (McKinney, Yoon and Zahedi, 2002; Oliver, 1980, 1993). However, customer satisfaction need not be the only determinant (Jones et al., 2000).

Most studies have researched consumer satisfaction (Bhattacharjee, 2001; DeLone and McLean, 2003; Oliver, 1993; Wang, 2008). Surprisingly little research has focused on negative emotional experiences, such as regret, in the consumer context. Limited literature shows that the regret which consumers experience has a negative impact on their emotions and behaviors, namely, dissatisfaction (Cooke, Meyvis and Schwartz, 2001; Inman, Dyer and Jia, 1997; Keaveney, Huber and Herrmann, 2007; Taylor, 1997; Tsiros, 1998; Tsiros and Mittal, 2000; Zeelenberg and Pieters, 1999; Zeelenberg and Pieters, 2004), switching behavior (Inman and Zeelenberg, 2002; Zeelenberg and Pieters 2004), complain (Tsiros and Mittal, 2000; Zeelenberg and Pieters, 2004) and low repurchase intention (Keaveney et al., 2007; Tsiros and Mittal, 2000). This study intends to explore regret further, in greater detail.

The importance of regret has been well documented in the marketing literature (Keaveney et al., 2007; Tsiros and Mittal, 2000; Zeelenberg and Pieters, 2004). However, the role of regret is still important in the online shopping literature. There has been limited focus on the regret construct in the context of e-commerce. Consumers may find that regret occurs more frequently in online shopping than in actual shopping. Excellent opportunities remain to explore the causes of regret in the Internet shopping context. Online marketers seek ways to help Internet buyers advance through the buyer decision-making process. Understanding how online consumers recognize consumption problems, search for information in pre-purchasing, make purchases, and engage in post-purchase behaviors are activities of inherent interest to online marketers (Schmidt and Spreng, 1996). This study will attempt to investigate the ways in which Internet buyers engage in pre-purchase, purchase and post-purchase evaluations, before experiencing either satisfaction or regret. How might overall purchasing activities influence the Internet buyers' later experience of regret? Consumers may frequently experience negative emotions in Internet shopping when seeking a particular product but being unable to find the product; the purchase of a product, service and post-purchase price may give rise to dissatisfaction, producing regret in regard to choosing a particular online retailer.

The current study is an initial attempt to increase our understanding of Internet buyers' regret and identify its antecedents and consequences. The literature on regret and satisfaction is briefly reviewed, and a model of buyer regret is proposed. The model incorporates antecedents and consequences of regret. The model and its hypotheses are tested via structure equation model (SEM). We then discuss the results, contributions and implications, and then offer directions for future research.

## LITERATURE REVIEW

### Regret Theory and Satisfaction

Satisfaction is the result of a comparison process (Yi, 1990). The satisfaction construct has a venerable history in marketing literature, especially in consumer behavior literature (Yi, 1990) because it has been most widely studied in consumer behavior literature. However, only a limited amount of research has focused on regret in the consumer behavior context. Regret is a negative emotion that occurs when a foregone alternative turns out to be, or is imagined to be, a better choice than the selected alternative (Zeelenberg, van Dijk and Manstead, 2000). Economists have derived independently an economic theory of regret that take the probability of regret into account when formulating decision theories in an attempt to interpret many observed violations of the axioms of expected utility theory (Bell, 1982, 1983; Loomes and Sugden, 1982). Landman (1987) found that when the chosen alternative was not the optimal choice, it led to an unpleasant experience; finding out that a forgone alternative would have yielded a better outcome has led to a class of decision theories known as regret theory. Regret theory supposes that the expected utility of an option depend not only on the calculus of pleasure and pain related with the outcomes of that option to the outcomes of a rejected option (Zeelenberg, 1999; Zeelenberg and Pieters, 1999; Zeelenberg and Pieters, 2004).

Much of the work that psychologists have carried out linking regret and satisfaction examined how and when people spontaneously generate particular counterfactual comparisons (Kahneman and Varey, 1990). How does regret differ from satisfaction? Both regret and satisfaction represent a response to a comparison. For satisfaction, the comparison is between expected and actual performance, whereas for regret the comparison is between the performance of the chosen and forgone alternatives (Tsiros and Mittal, 2000). Several researchers argue for a conceptual difference between the two constructs (Inman et al., 1997; Oliver, 1997; Tsiros, 1998). Regret is specifically related to choice, whereas satisfaction is related to outcomes. Gardial et al. (1994) suggested that, with respect to standards of comparison, thoughts of satisfaction were less likely than post-purchase thoughts to include comparisons to other brands and were more likely to include comparisons to internal standards. Hence, they concluded that the use of different comparison standards suggested that consumers may evaluate satisfaction in a manner that differs from post-purchase evaluations in general.

Oliver (1997) viewed regret as an antecedent of satisfaction and, therefore, the two constructs may be seen as being conceptually different from each other. Other differences between satisfaction and regret can be drawn from studies by Boles and Messick (1995) and Tsiros (1998). They found that under certain conditions both regret and satisfaction or rejoicing and dissatisfaction may be experienced at the same time. Regret and satisfaction have been shown to be theoretically and empirically distinct concepts, able to exist uniquely yet simultaneously (Boles and Messick, 1995; Kang, Hong and Lee, 2009; Liao, Liu, Liu, To and Lin, 2011; Tsiros, 1998; Tsiros and Mittal, 2000; Zeelenberg and Pieters, 1999; Zeelenberg and Pieters, 2004).

### Evaluations of the Overall Purchasing Process

We want to examine how pre-purchase, purchase and post-purchase evaluations affect regret and satisfaction. How we evaluate a purchase depends on the overall purchasing process evaluations. Pre-purchase evaluation, such as external search

effort, is the degree of attention, perception and effort directed toward obtaining environmental data or information related to the specific purchase under consideration (Beatty and Smith, 1987). Minimizing search effort is a strong guiding principle for most Internet buyers. Shim and Shin (2002) noted that Internet buyers are reluctant to exert more than a few mouse clicks and browser window scrolling quickly becomes intolerable. In general, searching for a product among e-retailers requires a lot of effort. It shows that an unsuccessful search experience is a sign of failure, and regret ensues.

As a result, service is offered during ordering and after sales. Therefore, purchase and post-purchase stages both include service-attribute evaluations. Moreover, post-purchase stages also include product-attribute evaluations and post-purchase price perceptions. Prior studies of regret in marketing literature have looked at both products (Lassar, Folkes, Grewal and Costley, 1998; Tsiros and Mittal, 2000) and services (Taylor, 1997; Tsiros, 1998; Zeelenberg and Pieters, 1999, 2004), but not both simultaneously. However, many products are accompanied by a significant service component (e.g., information technology), just as many services have a significant product component (e.g., restaurants); a complete model of buyer regret must take both into account (Keaveney et al., 2007). The distinction in IS literature is also important because each component might be provided by a different Internet marketing entity. With online shopping, the online retailer provides the product component and the service component. In addition, we also focus on post-purchase price perceptions as being the key factors associated with a buyer's regret and satisfaction. According to a psychological rationale post-purchase prices might have a greater effect on regret (Miller and Gunasegaram, 1990). Miller and Gunasegaram (1990) found that later occurrences in a sequence of events evoke counterfactual comparisons more strongly. This study is the first to compare the effects of product-attribute evaluations, service-attribute evaluations and price perceptions on buyers' regrets and satisfactions in the context of Internet shopping.

## RESEARCH MODEL AND HYPOTHESES

Regret is the central focus of this study. The model of Internet buyers' regret depicted in Figure 1 summarizes our hypotheses about how selected overall purchasing process stages of the Internet buyer decision process might affect regret. We expect that search effort, service-attribute evaluations, product-attribute evaluations and post-purchase price perceptions all have an effect on Internet buyers' regret and satisfaction, and that regret and satisfaction influence repurchasing intentions.

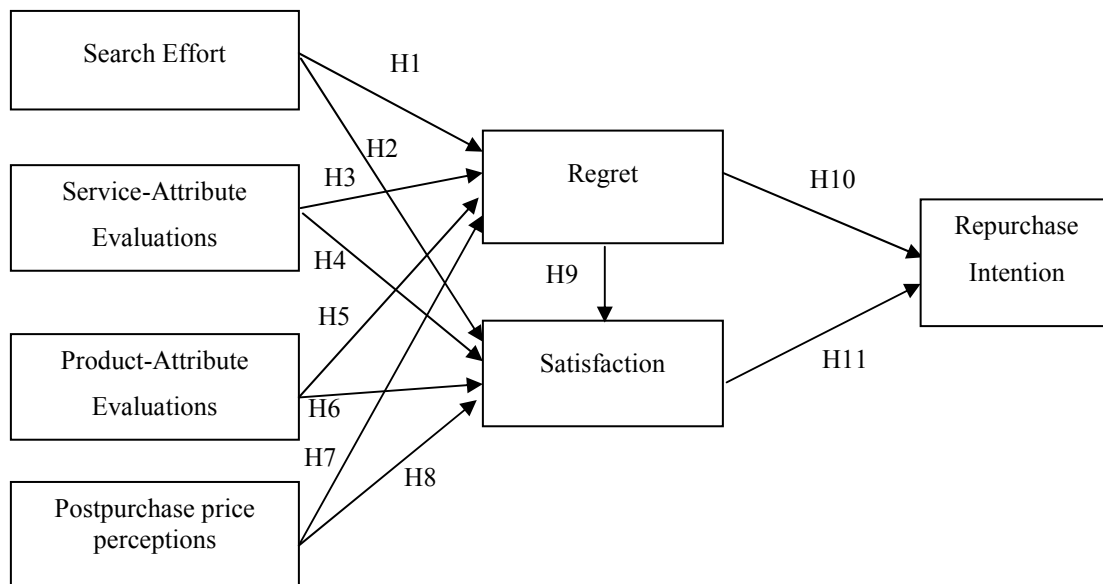


Figure 1. Research Model

### Antecedents of Regret and Satisfaction

This study is the first to compare the effect of the overall purchasing process on regret and satisfaction in online shopping. The first pre-purchase antecedent is termed "Search Effort," which reflects the Internet buyer's tendency to feel regret when the search process was difficult, as in the case where Internet buyers spend too much time and effort to search particular product. If it is difficult to search for a product, then buyers may regret shopping with the particular online retailer. In an

online environment, Internet buyers easily switch. Difficult search experiences are not necessarily the norm, where buyers experience only failure as an outcome. While some might be motivated to exert more effort when they perceive a relative advantage, less interest is shown once buyers realize the task is more cumbersome (Kivetz and Simonson 2003). Weiner's (1985) comment, that the unsuccessful search experience is a sign of failure and that regret should ensue, is true. Conversely, ease of search may procure a feeling of satisfaction. As such, we offer the following hypotheses:

H1: Search effort positively impacts regret.

H2: Search effort negatively impacts satisfaction.

Attribute evaluations have a direct positive effect on overall satisfaction (e.g., Mittal, Kumar and Tsiros, 1999; Oliver, 1993 ; Spreng, MacKenzie and Olshavsky 1996) and a negative effect on regret (Keaveney et al., 2007). Tsiros (1998) suggested that regret is related to choice, whereas dissatisfaction is related to outcomes. Dissatisfaction occurs when product performance falls below what the Internet buyer expected for that product; in contrast, regret occurs when product performance falls below what the Internet buyer could have had with a forgone alternative. When Internet buyers complete an attribute evaluation of the product, they might feel overall satisfaction but yet, at the same time, feel a twinge of regret if some attributes compare unfavorably to what might have been expected (Keaveney et al., 2007). Hence, we deduce that attribute evaluations are, simultaneously, negatively related to regret and positively related to overall satisfaction.

H3: Service-attribute evaluations negatively impact regret.

H4: Service-attribute evaluations positively impact satisfaction.

H5: Product-attribute evaluations negatively impact regret.

H6: Product-attribute evaluations positively impact satisfaction.

Miller and Gunasegaram (1990) offered a psychological rationale as to why post-purchase prices might have a greater effect on regret. Their results suggested that post purchase prices, because they are the most recent price information received, may lead to especially salient counterfactual comparisons. Cooke (2001) expected post-purchase prices to affect satisfaction; as post-purchase prices decrease, more regret and less satisfaction with a given purchase is felt. Thus, regret and satisfaction may depend on post-purchase prices. We expect that more favorable price perceptions will contribute to more favorable satisfaction judgments and less to experiences of regret.

H7: Post-purchase price perceptions negatively impact regret.

H8: Post-purchase price perceptions positively impact satisfaction.

### **Consequences of Regret**

Some studies have shown regret to be a significant determinant of consumers' satisfaction and dissatisfaction (Keaveney et al., 2007; Taylor, 1997; Tsiros and Mittal, 2000; Zeelenberg and Pieters, 2004). Higher levels of regret decrease satisfaction. Taylor (1997) found, in two studies on satisfaction with movies, that, in addition to expectancy disconfirmation about the chosen movie, the expected quality of non-chosen movies (i.e., a proxy for regret) influenced satisfaction with the chosen movie.

Thibaut and Kelley (1959) suggested that regret may influence behavioral intention in so far as it may not solely be determined by satisfaction. Research in marketing literature shows that there is a positive relationship between satisfaction and repurchase intention (Oliver, 1980) and a negative relationship between regret and repurchase intention (Keaveney et al., 2007; Tsiros and Mital, 2000). Outcomes may be evaluated, not only according to whether they meet a predetermined level of expectation, but also relative to alternatives available in the marketplace, and such evaluations are likely to influence intentions (Tsiros and Mittal, 2000). If the forgone alternative outperforms the chosen alternative, buyers may very well intend to switch to the forgone alternative at the next purchase occasion, even if they are highly satisfied with their chosen alternative. Hence, we expect that both satisfaction and regret are likely to directly influence repurchase intention.

H9: Regret negatively impacts satisfaction.

H10: Regret negatively impacts repurchase intention.

H11: Satisfaction positively impacts repurchase intention.

## RESEARCH METHODOLOGY

### Measurement

The questionnaire in the research model is derived from previous studies. A pretest of the survey was carried out by two MIS researchers to improve the face validity of the instrument. Fifty graduate students were used as the sample of the pilot study before the instrument was launched to the sample target population. The result of the pilot study showed that Cronbach's  $\alpha$  value of each construct met the standard of 0.7, as suggested by Nunnally (1978). All items in the questionnaires adopted a 7-point Likert scale, with 1 representing total disagreement and 7 representing total agreement. Search effort is defined, following Reynolds, Flose and Jones (2006), as the degree to which the search experience was difficult. The scale items for service-attribute evaluations were adapted from Harris and Goode (2004) and Tsai et al. (2006). Product-attribute evaluations were developed from the study of Berens et al. (2005) and Dodds et al. (1991). Attribute evaluations are defined as the consumer's subjective satisfaction judgment resulting from observations of attribute performance; it is the psychological fulfillment response which consumers make when assessing performance (Oliver, 1993). Service-attribute evaluations are indicated by eight items. The items reflect the degree to which buyers perceive that the e-vendor facilitates efficient and effective shopping, purchasing and delivery. Product attribute evaluations are indicated by seven items assessing consumers' satisfaction with the product's reliability, durability and quality. The scale items for post-purchase price perceptions were developed from the study of Voss et al. (1998). Furthermore, to develop a scale for measuring regret and overall satisfaction, we utilized the methods of Tsiros and Mittal (2000) and Bhattacharjee (2001). The scale for repurchase intention was developed and tested in Agarwal and Karahanna (2000).

### Data Collection

Empirical data were collected by conducting a field survey of online customers. Announcements were made in several popular online shopping related boards such as Yahoo! Kimo, PChome Online, ET Mall and campus bulletin board systems (BBS) in Taiwan, such as PTT and Formosa, to invite online customers to fill out the questionnaires. A lottery was held as an incentive for participation.

A total of 458 questionnaires were received. After eliminating the duplicated copies, copies with missing value or other invalid copies, a total of 422 questionnaires were regarded as valid. For the demographic distribution of the samples (see Table 1). 50.2% of respondents were male, and 49.8% were female. Only 16.6% of respondents were under age 20. Around half of the respondents (53.5%) were aged from 20 to 30. 29.9% of respondents were above 30 years of age. As far as occupations were concerned, the results showed that the "student" and "business/industry" group, which accounted for 36.0% and 40.3% of total respondents, respectively, were the largest groups to use online shopping. Most of the respondents (65.6%) had Internet experience above 6 years. Most of the respondents (67.8%) had less than 4 years of Internet purchasing experience. 32.2% of respondents had more than 4 years of Internet purchasing experience.

Demographics	Category	Frequency	Percentage
Gender	Male	212	50.2
	Female	210	49.8
Age	<19	70	16.6
	20-29	226	53.5
	30-39	103	24.4
	>40	23	5.5
Occupation	Student	152	36.0
	Soldier/Official/Teacher	29	6.9
	Business/Industry	170	40.3
	Retirement	3	0.7
	House keeper/Not employed	28	6.6
	Others	40	9.5
Internet experience(Year)	<1	21	5.0
	1~2	15	3.6

	2~3	15	3.6
	3~4	23	5.4
	4~5	36	8.5
	5~6	35	8.3
	>6	277	65.6
Internet purchasing experience (Year)	<1	83	19.7
	1~2	68	16.1
	2~3	65	15.4
	3~4	70	16.6
	4~5	38	9.0
	5~6	32	7.6
	>6	66	15.6

Table 1. Descriptive Statistics of Respondents

## DATA ANALYSIS AND RESULTS

### Measurement Model Assessment

Unlike other SEM techniques (such as AMOS or LISREL), which are based on the covariance structure of the latent variables, PLS is a component-based approach. PLS was chosen over other SEM techniques because it places minimal restrictions on measurement scales, sample size and residual distributions (Chin et al. 2003). Moreover, PLS is more suitable when the research model is in an early stage of development and has not been examined extensively (Chin, 1998). Furthermore, PLS could overcome the multicollinearity problems (Rouse and Corbitt, 2008). Therefore, we used the partial least squares (PLS) method of structural equation modeling (PLS-Graph 3.0) in view of PLS method's ability to handle highly complex predictive models. The acceptability of the measurement model was assessed by the reliability of individual items, internal consistency between items as well as the model's convergent and discriminant validity. Table 2 shows the number of items, mean, standard deviation, composite reliability, average variance extracted (AVE), and square root of the AVE, as well as the correlations between the constructs.

No.	Construct	No. of items	Mean (S.D.)	Composite reliability	AVE	Correlations						
						1	2	3	4	5	6	7
1	Search Effort	3	3.02 (1.29)	0.97	0.92	0.96						
2	Product-Attribute Evaluations	7	5.04 (1.04)	0.97	0.82	-0.45	0.91					
3	Service-Attribute Evaluations	8	5.18 (1.03)	0.95	0.72	-0.47	0.68	0.85				
4	Post-Purchase Price Perceptions	3	5.02 (1.11)	0.95	0.83	-0.44	0.61	0.61	0.91			
5	Regret	3	5.27 (1.08)	0.95	0.83	0.51	-0.60	-0.61	-0.66	0.91		
6	Satisfaction	4	2.85 (1.16)	0.97	0.90	-0.48	0.52	0.54	0.50	-0.53	0.95	
7	Repurchase Intention	3	5.29 (1.12)	0.96	0.86	-0.49	0.67	0.61	0.64	-0.61	0.52	0.93

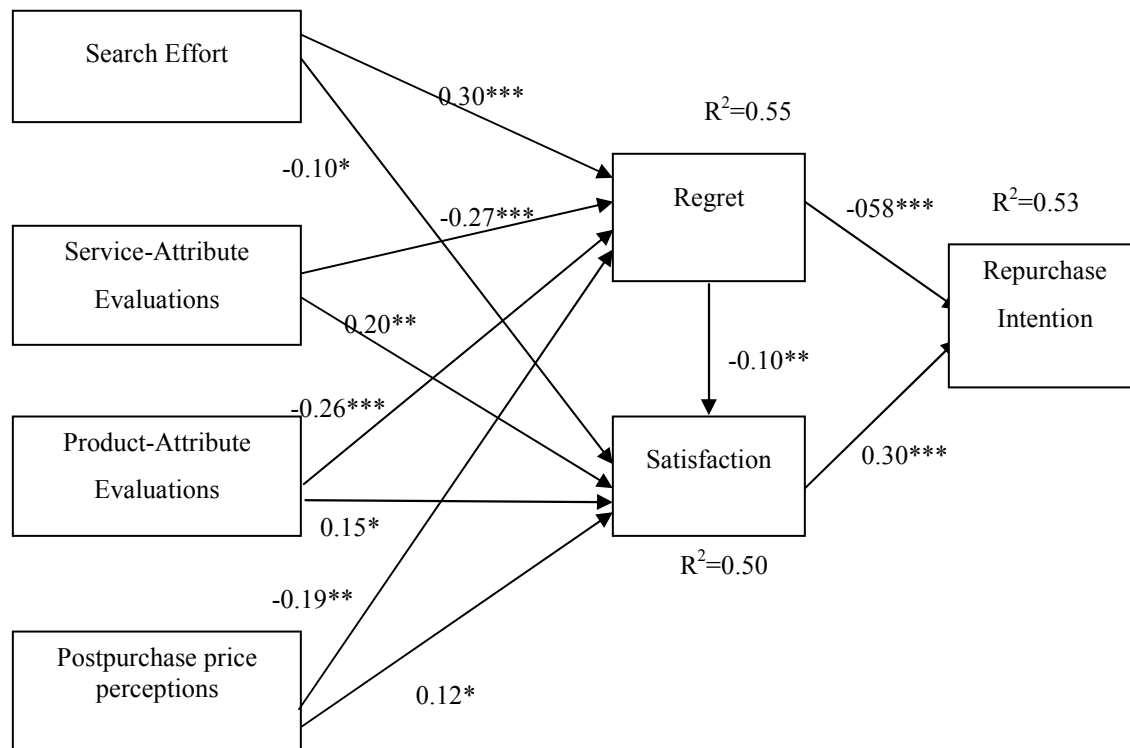
**Table 2. Descriptives and Correlations**

The composite reliability measures were all greater than 0.80, which was above the 0.7 recommended in research, indicating adequate internal consistency (Bagozzi and Yi, 1988). Convergent validity is demonstrated as the AVE values for all constructs were above the suggested threshold value of 0.50 (Fornell and Larcker, 1981). Discriminant validity is shown when the square root of each construct's AVE is larger than its correlations with other constructs (Fornell and Larcker, 1981). The square root of the AVE is much larger than its correlations with the other constructs; therefore discriminant validity was achieved (see Table 2).

### Structural Model Assessment and Hypotheses Testing

The standardized PLS path coefficients for testing the structural model are shown in Figure 2. The findings supported all of the hypotheses (H1 to H11). In terms of pre-purchase antecedents of Internet buyers' regret, the research model predicted that search effort is positive and significantly correlated with regret, with a path coefficient of 0.30 ( $t=4.84$ ), and negatively correlated with satisfaction, with a path coefficient of -0.10 ( $t=2.31$ ). Hypotheses H1 and H2 were supported.

Service-attribute evaluations during purchase and post-purchase stages have a significant negative effect on regret, with a path coefficient of -0.27 ( $t=3.38$ ), and a significant positive effect on satisfaction, with a path coefficient of 0.20 ( $t=2.83$ ). In terms of post-purchase antecedents of Internet buyers' regret, results support the prediction that product-attribute evaluations have a negative effect on regret, with a path coefficient of -0.26 ( $t=3.37$ ), and positive effect on satisfaction, with a path coefficient of 0.15 ( $t=2.29$ ). In addition, post-purchase price perceptions have a negative effect on regret, with a path coefficient of -0.19 ( $t=2.84$ ), and, at the same time, a positive effect on satisfaction, with a path coefficient of 0.12 ( $t=1.99$ ). Hypotheses H3 to H8 were supported. Overall, the results indicate that service-attribute evaluations have a greater effect on regret and satisfaction than product-attribute evaluations and post-purchase price perceptions.

**Figure 2. Results of PLS Analysis**

Finally, in terms of consequence, Internet buyers' regret has a significant negative effect on satisfaction, with a path coefficient of -0.10 ( $t=2.65$ ), and on repurchase intention, with a path coefficient of -0.58 ( $t=12.75$ ) at the 0.001 level of significance. Satisfaction has a significant positive effect on repurchase intention, with a path coefficient of 0.30 ( $t=5.10$ ) at the 0.001 level of significance. Hypotheses H9, H10 and H11 were also supported. The results showed that regret is the most important antecedent of repurchase intention. The variance of repurchase intention is 53%. The two-mediation-variable



(regret and satisfaction) model reported in this study explains a larger amount of variance (53%) for the repurchase intention variable, as opposed to only 39% in the one-mediation-variable (satisfaction) model. This significant improvement provides some beginning evidence for the separation of the two mediation variables, in favor of the final model reported here in this study.

## DISCUSSIONS AND IMPLICATIONS

This study empirically explores the applicability of the online consumer purchasing process and regret theory to repurchase intention in online shopping. In doing so, it contributes to the IS literature in a number of ways. The regret construct has not received as much attention in IS literature. The regret model is proposed as an appropriate framework for understanding customers' repurchase behavior in online shopping. Moreover, this study considers how the research model can be used to suggest new predictors of repurchase behavior. It also provides academic implications for future studies and practical implications for e-vendors.

Prior studies have been confined to exploring satisfaction, whereas regret is a new construct in IS use research. Conceptualizing this construct and validating its antecedents and consequences in online shopping are important contributions of this study. To the best of our knowledge, this is the first study that specifically addresses regret in the online shopping scenario; several previous marketing researchers have identified product quality, service quality or post-purchase price perceptions as important antecedents of satisfaction (Mittal et al., 1999; Oliver, 1980, 1993; Spreng et al., 1996; Voss et al., 1998). Poor perceptions of product, service and price can pose a regretful experience for online customers. There are large differences between a physical store and its electronic counterpart. The Internet is revolutionizing the ways in which products and services are marketed to consumers (Kannan, Chang and Whinston, 1998). As an innovation that is rapidly evolving, shopping using the Internet carries certain risks. Typically, online shopping involves "exposure to a product choice without trial, the inability to pick up, touch, and smell the product and a wait of several days to receive the product" (Burton, 2002). In-store consumers gain first hand experience and respond to multiple sensory modalities (Holbrook and Moore, 1981). In addition, consumers worry that the online retailers may misuse their privacy information such as credit card numbers, home address, dress size, etc. (Vijayarathy, 2004). Online shopping is regarded as a riskier transaction than physical shopping (Slyke, Shim, Johnson and Jiang, 2006). Hence, buyers may more readily experience regret in online shopping than in physical shopping. However, no studies have explored overall purchasing process evaluations effects on regret in the online shopping context. To fill this knowledge gap, our study proposed to demonstrate the effects of overall purchasing process on both regret and satisfaction. This study found that regret may be the key to explaining the discontinued use of IS, a little-understood phenomenon in IS use research. To sum up, not only satisfaction, but also regret plays an important role in influencing online buyers' continuance intention. This is an important finding that paints a more robust picture of continued online shopping behavior than previous studies have done. The study recommends that researchers give more consideration to negative emotional experiences such as regret than they have done in the past.

This study empirically identified the antecedents and consequences of regret and satisfaction. Major results of this study are that evaluations of overall purchasing process such as search effort, service-attribute evaluations, product-attribute evaluations and post-purchase price perceptions affect regret and satisfaction of Internet buyers and that regret and satisfaction significantly influence the intention to repurchase from online retailers. We developed the research model to contribute many important findings and, consequently, to suggest implications.

This study represents a first attempt to identify and examine the overall purchasing process evaluations on regret and satisfaction formation in the e-commerce context. Gaining a better understanding of regret and satisfaction formation in online shopping would require adding such evaluations to our model and then empirically examining the research model; therefore, we considered overall purchasing process evaluations. Our research purpose was to examine an online shopping scenario in which regret is actually experienced. In this study, an actual regretful consumer experience was investigated. In prior literature, regretful situations were little researched. Thus, a key contribution of this study is the development and testing of a regret model that integrates pre-purchase assessments of search, purchase and post-purchase assessments of service and post-purchase assessments of product and price in the overall Internet purchasing process.

Before making a purchase, the Internet buyer always searches for relevant information. Thus, an information search may be useful in online shopping. Our important finding is that search effort not only influences regret, but also influences overall satisfaction. This result indicates that unsuccessful searches can generate a regretful experience for Internet buyers during the pre-purchase stages of the Internet buyer decision-making process. Also, the results show that the more difficult it is for Internet buyers to search for information in the e-vendor, the more they experience regret; conversely, the easier the search, the greater the satisfaction. Overall, ease of search leads to higher satisfaction and reduces regret in regard to the chosen online retailer. This result is especially important for market practitioners; they need to consider the importance of making the

Internet search easy. The results point to specific strategies e-vendors can undertake to offer Internet buyers a better search experience, which could lead to a reduction in regret and an increase in satisfaction. A built-in strong search engine can aid buyers to find what they need. Search engines and agent technologies dramatically reduce search costs (Gupta et al., 2004; Kamis and Stohr, 2006). Therefore, we suggest that practitioners should work harder to ease the search experience by providing stronger search engines, stronger agent technologies, simple navigation structures, sufficient information, product availability, and customized service. In summary, helpful, friendly and intelligent search functions could be instrumental in decreasing the likelihood of an unsuccessful search experience, and thereby avoiding high levels of regret.

This is the first study to compare the effects of product, service and price evaluations on regret and satisfaction in the e-commerce context. The findings suggest that evaluations of product, service and price are positively related to satisfaction and negatively related to regret. It is the poor evaluations of product, service and price that influence buyer regret. However, service attribute evaluations have a greater impact. DeLone and McLean (2003) suggested that “service quality” be added as an important dimension of IS success given the importance of IS support, especially in the e-commerce environment where customer service is crucial. Even though product quality and price were initially thought to be the drivers of e-vendor success, service quality has become more important. When buyers were unable to complete transactions, when products were not delivered on time or at all, when inquiries were not answered, and so on, the viability of e-channels was jeopardized (Parasuraman, Zeithaml and Malhotra, 2005). On the other hand, service attributes are intangible, subjective, variable, and ephemeral, making them good candidates for imaginary revisions. Greater mutability of service attributes, or the greater propensity for services to trigger counterfactual thinking, are proposed as theoretical explanations (Keaveney et al., 2007). The difficulty in evaluating service performance could increase the likelihood of counterfactuals. Services would be more vulnerable to buyer regret (Tsiros and Mittal, 2000). Taken together, we find that the weight of the preceding arguments falls in favor of services being more susceptible to regret. In addition, appropriate deployment of marketing resources, aimed at improving service quality, significantly enhances Internet buyers’ satisfaction. We suggest that practitioners, who seek to improve Internet buyers’ perceptions of service attributes, ought to consider privacy/security, functionality, ease of use, friendliness of the e-vendor, the offer of useful information and good after-sales service. For example, they should deliver products within the time promised, offer readable terms and conditions (e.g., payment, warranty, and return policies) as well as secure mechanisms and respond to buyers’ inquiries promptly, and so on (Bauer, Falk and Hammerschmidt, 2006 ;Liao and Cheung, 2008). Also, online claims, such as product return policies must be upheld and honored in order to enhance overall satisfaction and strengthen intention to repurchase (Parasuraman et al., 2005; Tsai et al., 2006). However, e-marketers need to be aware that simply fulfilling an order is not enough; they need to be concerned with all the details of when, where, and how a package is delivered to a consumer (Collier and Bienstock, 2006). In addition, affective reactions are of crucial importance for the evaluation of e-services is reflected in the finding that fun and enjoyment, which characterize a hedonic experience, are major determinants of online usage behavior (Koufaris, 2002; Van Riel, Liljander and Jurriens, 2001). The aesthetic appeal of the e-vendor relates strongly to the judgment of the functionality and usability of an e-vendor (Bauer et al., 2006). Therefore, practitioners should not only focus on utilitarian e-service quality elements but also hedonic quality aspects. Overall, practitioners should continuously maintain and improve e-service to best meet the needs, wants and demands of both current and potential buyers (Harris and Goode, 2004).

Moreover, the results show that post-purchase price perceptions have an effect on regret and satisfaction. As post-purchase price perceptions decrease, there is the likelihood of more regret and less satisfaction with a given purchase. Post-purchase prices are the most recent price information received, and may lead to especially salient counterfactual comparisons. Later occurrences in a sequence of events evoke counterfactual comparisons more strongly (Miller and Gunasegaram, 1990). If buyers feel that post-purchase prices are very unreasonable, they will experience regret. Conversely, more reasonable and favorable price perceptions will contribute to more favorable satisfaction judgments and lessen the feelings of regret. Therefore, whether or not regret and satisfaction are experienced will depend on post-purchase prices perceptions.

This study shows that regret not only has a direct influence on repurchase intention but also an indirect influence on repurchase intention through satisfaction. Regret influences the extent to which customers are dissatisfied with the e-vendor. Satisfaction, in turn, influences the intention to purchase with an e-vendor. Practitioners typically measure buyer satisfaction after purchase. This study suggests that practitioners should also measure regret, since it is buyer regret that negatively affects satisfaction and repurchase intention. Online retailers can undertake to offer Internet buyers a better shopping experience, which might either prevent or reduce buyer regret. Practitioners should help buyers to feel that they made the right choice, so that they will feel good about choosing this e-vendor, and have no regrets.

The special characteristics of the Internet make it relatively easy for buyers to switch from one e-vendor to another. If one e-vendor can offer better products/services or lower prices than another, then consumers will often desert the first e-vendor to take advantage of the offerings of the second one. E-vendors now need to focus not only on boosting transaction volume but also on strengthening consumer loyalty to reduce customer loss. E-vendors that succeed in doing so will be able to maintain

and strengthen their competitive advantage. Practitioners have long known that their products, services and prices must be presented competitively. In summary, we suggest that practitioners should ensure that their product and service be of the highest quality, and that they use price-based strategies to enhance consumer satisfaction to avoid consumer regret.

### Limitations and Future Research

This study has several limitations. The research presented here is only an initial examination of regret and includes a limited view of possible antecedents and consequences in the e-commerce context. Further research is definitely needed to obtain a better understanding of the phenomenon and to identify additional antecedents, consequences and associated moderating variables. There is a need to investigate the result of individual differences; some people are simply more emotional and may be more inclined to feel negative emotions than others. Thus, it is suggested that future research could be conducted to explore the effects of individual differences.

Regret following a service failure had a direct effect on customer's switching behaviors (Inman and Zeelenberg, 2002; Tokman, Davis and Lemon, 2007; Zeelenberg and Pieters, 1999). Thus, future research investigating how the experience of regret impacts switching decisions would also prove beneficial for e-vendors. Another interesting issue for future research is the extent to which the moderating role of factors, such as product category and product involvement, invoked by our research model and empirically supported by our results in the e-commerce context, is applicable to other Internet service categories. The primary focus of this study is the examination of the overall purchasing process roles on regret and satisfaction formation; we do not explicitly model other competitor-related constructs that also might influence regret and satisfaction. Therefore, future research could include other potential factors and explore their roles in the regret and satisfaction formation processes.

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