



The impact of product category on customer dissatisfaction in cyberspace

The impact of
product category

635

Yooncheong Cho

*School of Business Administration, Hawaii Pacific University, Honolulu,
Hawaii, USA*

Il Im

*Information Systems Department, New Jersey Institute of Technology,
Newark, New Jersey, USA*

Jerry Fjermestad and Starr Roxanne Hiltz

*Information Systems Department, New Jersey Center for Pervasive
Information Technology, New Jersey Institute of Technology, Newark,
New Jersey, USA*

Keywords *Product attributes, Customer satisfaction, Monetary policy, Complaints, Purchasing*

Abstract *How do online customers judge a product's attributes in cyberspace? Previous studies of online product category suggest that all goods are not equal on the Web, because products have different attributes. Furthermore, the literature assumes that the customer's ability to evaluate product quality on the Web differs according to product attributes. Based on these considerations, the purpose of this study is to determine whether a customer's dissatisfaction and propensity to complain on the Web differ depending on product category. This study examines how selected variables (i.e. monetary, and non-monetary effort, and the degree of involvement) influenced the impact of product category on customer dissatisfaction. The analysis was performed using survey data, collected both online and offline. The findings suggest the most appropriate strategies online companies should employ for each product category in question.*

1. Introduction

Purchasing behavior in traditional physical markets and in online markets differs depending on what type of products/services customers have in mind. Although e-businesses expend a major effort in maximizing customer satisfaction and minimizing customer dissatisfaction, they face critical limitations. Online customers cannot see/touch/smell/hear the actual products via online transactions. For example, for products such as clothes, shoes, and cosmetics, the general tendency of customers is to try and see the products, since online information regarding their actual ingredients, such as type of fabric, for instance, does not provide enough information to make a purchase decision. Another common reason that customers wish to try and see such products physically is that even clothes of the same size may differ in actual sizes across companies. For example, size "medium" from the A company maybe almost like size "large" from the B company.



There are some exceptions in terms of purchasing such products as clothes, shoes, and cosmetics on the Web. For example, customers who have prior experiences with specific brands and/or products might not hesitate to purchase them online because their familiarity has accorded them full information about the products. However, without those prior familiarities, it is not easy to determine the quality of products such as clothes, shoes, and cosmetics on the Web.

The current literature regarding customer dissatisfaction on the Web has rarely focused on the impact of product categories on dissatisfaction. The previous study by Cho *et al.* (2002) indicates that customers' satisfaction/dissatisfaction on the Web is affected by the types of products they purchased. The purpose of this study is to explore the impact of product category on various issues in online shopping, including customers' dissatisfaction. This study uses product categories by Degeratu (2000) and investigates how product category impacts customers' dissatisfaction. In examining the relationship between product category and dissatisfaction, this study adopts three moderating variables, monetary effort, non-monetary effort, and ego involvement, which were frequently applied in the studies of product classification (e.g. Murphy and Enis, 1986). The perceived price by customers was used to measure monetary effort, while search effort and time were identified as non-monetary effort. Different effects of moderating variables on dissatisfaction based on product category are discussed in the conclusion of this study.

2. Conceptual background

Products were classified in a number of ways in the traditional market place. Based on the product classification by Murphy and Enis (1986), four categories of products – convenience, preference, shopping, and specialty – are defined in terms of the buyer's evaluation of the price. Two dimensions were used to explain this classification of products, risk and effort. Risk (Murphy and Enis, 1986) in this study is the buyer's subjective feeling about the monetary and non-monetary price of the product, while effort is defined as the objective amount of money and time it takes to purchase a product. According to these dimensions, convenience products (e.g., fresh produce, grocery staples, etc.) are defined as lowest in terms of both effort and risk (Murphy and Enis, 1986); preference products (e.g. beer, soft drinks, etc.) are slightly higher in the effort dimension and much higher in risk; shopping products (e.g. automobiles, clothing, furniture, etc.) include increased levels of risk and also are perceived by consumers as high involvement products; and specialty products (e.g. vintage wines, expensive cars, etc.) are defined to be highest in both risk and effort.

Recent approaches to product category on the Web have studied the degree of requirements of consumer's physical presence. Kiely (1996) mentions that the

impact of interactive home shopping depends on the requirements of the consumer's physical presence. Shoppers at Home Depot, for example, typically inspect the size, specifications, or colors of the tools, gadgets, and other building materials they are planning to purchase, and often seek advice from the retailer's sales associates (Kiely, 1996). Thus, if retailers are to succeed in interactive home shopping, they will need to develop a much more sophisticated understanding of how to create and deliver detailed product information to their customers.

A study by Degeratu *et al.* (2000) classified products on the Web as sensory vs non-sensory. This category was suggested because online transactions differ from traditional exchanges in terms of a product's sensory attributes such as touch, smell or sound. Sensory products were defined as those that have attributes that can be conveyed through our senses, particularly touch, smell, or sound, while non-sensory products were defined as products with attributes that can be conveyed reasonably well in words (Degeratu *et al.*, 2000). The study by Cho *et al.* (2002) found that online customers' complaints are greater with sensory products than with non-sensory products, particularly when customers are dissatisfied with the presentation of the information provided for the sensory product compared to information for the non-sensory product.

Studies by Kiely (1996) and Cho *et al.* (2002) both suggested that products with a higher physical presence (i.e. customers must see, touch, or smell the product) should provide as much sophisticated information as possible. In other words, on the Web, due to the inherent limitation in delivering sensory information, it is hard to make sound decisions for sensory products regardless of the time and effort spent on the information search. However, in the in-store environment, there is a good chance that decision quality increases if customers spend more time and effort in the information search for sensory products. It suggests that on the Web, tools for more detailed and sophisticated information will be needed for products that have such attributes. Therefore, it is interesting to see the impact of the quality of information on the customers' dissatisfaction based on the product continuum.

Another approach to product category was by de Figueiredo (2000) in the context of e-commerce. de Figueiredo (2000) examined whether quality is easy or difficult to judge in products on the Web. Products on the Web are unequal due to the inability to deliver actual services or adequately detail the specific nature of many products. Therefore, a product's attributes are not evaluated equally by customers on the Web (de Figueiredo, 2000). Four product categories on the Web by de Figueiredo (2000) include commodity products (e.g. oil, paper clips), quasi-commodity products (e.g. books, CDs, videos, or toys), look-and-feel goods (e.g. suits, furniture, model homes, etc.), and look-and-feel goods with variable quality (e.g. arts, produce, etc). According to product continuum on the Web by de Figueiredo (2000), product category

moves from commodity product to look-and-feel goods with variable quality, as a product's attributes are not easily evaluated by customers.

Sensory products do not convey all the attributes of the products on the Web. According to de Figueiredo (2000), customers need to see and touch products such as produce and art despite recognizing the brand and knowing the product. Therefore, customers are not likely to purchase sensory products with variable quality online, because their satisfaction after the purchase might not reach prior expectations. Thus, in an effort to fulfill customer expectations for those products, e-businesses sell sensory products only by providing customized technologies, such as pictures of the products, enlargements of the products, and size charts, etc. Frontier Web sites such as www.landsend.com, use advanced Web features such as a three-dimensional mirror images to reduce the uncertainty of the clothes they sell on the Web. Based on the previous work, this study used the product classification by Degeertu *et al.* (2000) and Kiely (1996), sensory vs non-sensory products. The study assumes that customers might be reluctant to purchase products with sensory products on the Web because they cannot measure the attributes of those products. It is expected that customers' dissatisfaction with sensory products on the Web might be higher than dissatisfaction with such products in the physical market place.

Customer dissatisfaction and complaints

Most of the definitions of satisfaction/dissatisfaction that have been proposed contain some mention of "expectation" or a synonym (Gilly, 1979). Even in common usage, as found in the *Random House Dictionary*, dissatisfaction is defined as resulting from "contemplating what falls short of one's wishes or expectations" (Gilly, 1979). Most conceptual discussion of dissatisfaction concludes that a discrepancy between perceived product performance and the consumer's expectation of performance leads to dissatisfaction (Landon, 1977). For example, Olson and Dover (1979) found that perceptions of product attributes are affected by expectations, and suggested dissonance theory as an explanation. Studies by Oliver (1980) also proposed that when perceived quality (which can be influenced itself, by expectations) was negatively disconfirmed after the consumption of the product or service, customers' dissatisfaction increases (Vavra, 1997).

The intensity of complaint behavior or propensity to complain was often hypothesized to be directly proportional to the degree of dissatisfaction (Bearden and Teel, 1983). Propensity to complain is defined as representing a summary measure of an individual's demonstrated inclination and intentions to complain in the face of any unsatisfactory purchase experience (Bearden *et al.*, 1979). Previous studies found that the "propensity to complain" has been operationally linked to past complaint actions, as a proxy for the inclination of consumers to complain (Bearden *et al.*, 1979; Gronhaug, 1977; Zaltman *et al.*, 1978).

The customers' dissatisfied experience based on product categories on the Web has rarely been the focus of study in the existing literature. This study hypothesizes that as the product quality is difficult to judge on the Web, the possibility of customers' being dissatisfied with that product increases. Thus, the first hypothesis is established to determine the impact of the degree of judgment of the product quality on the Web in the product continuum for customers' dissatisfaction.

Perceived price, information search effort and ego involvement

Figure 1 presents what this study is measuring. The Figure explains the process of the impact of the product category on the customers' dissatisfaction, intention to complain, and complaint behavior on the Web. The study also used the impact of the perceived price, information search effort, and ego involvement on online customers' dissatisfaction based on the different levels of the product on the continuum. Perceived price, information search effort, and ego-involvement were considered because they are main factors of the importance of the purchase, which significantly affect customers' satisfaction or dissatisfaction (Bearden *et al.*, 1979; Richins, 1984).

Perceived price, as a monetary effort, is often used as a dimension to classify the products in the literature. For example, perceived price was introduced as the importance of risk in the classification typology (Holbrook and Howard, 1977). Price is also emphasized as an important factor of customer satisfaction, because whenever consumers evaluate the value of an acquired service, they usually think of the price (Anderson *et al.*, 1994; Bei and Chiao, 2001). The role of price in this study is to measure how the impact of the perceived price affects the degree of the dissatisfaction on each product category. The perceived price is used, based on the definition of price from the consumers' viewpoint (Bei and Chiao, 2001). In the consideration of the product continuum on the Web (de Figueiredo, 2000), inexpensive products give consumers the incentive to purchase, even when those products are look-and-feel products with variable quality. Customers might purchase look-and-feel goods on the Web if the price

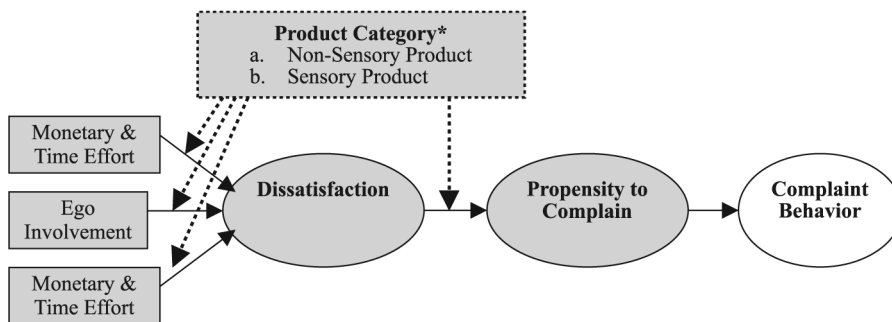


Figure 1. Conceptual framework for the impact of the product category on customer dissatisfaction and propensity to complain on the Web

* The degree of judgment of product quality is higher from a to b on the Web

is low, because the perceived monetary risk has been reduced. A previous study by Cardozo (1965) speculated that customer dissonance would be increased, as customers made considerable effort to buy a product or paid a substantial price. Thus, customer dissatisfaction might be increased if dissonance between expectation and actual outcome is increased. This study measures whether the level of dissatisfaction, if product category is controlled, is higher when the price is higher, because people expect more when they spend more.

H1. Customers' dissatisfaction increases as the customers' perceived price increases in a same product category.

H1a. The impact of the perceived price on customers' dissatisfaction will be higher with sensory products than non-sensory products.

Information search effort, as a non-monetary dimension, is another moderating variable in this study. Information search effort was focused as the search and evaluation of alternative stages in the decision-making process (Engel *et al.*, 1986; Murphy, 1986). Previous studies found that considerable time and effort in gathering information tend to increase the perceived importance of the purchase and consumers' feelings about positive and negative experiences after the purchase (Bearden *et al.*, 1979; Day, 1977; Day and Landon, 1977). Alternatively, Westbrook (1977) has suggested that the information search is positively related to dissatisfaction because of its role as a proxy variable for some basic psychological construct (e.g. risk aversion) which mediates the experience of dissatisfaction in buying situations.

This study expects that customers who put the greatest effort into researching information on the Web are attracted to e-businesses that provide key attributes, such as user-friendly presentation, proper information, and advanced technologies. The information search effort and spending time on the Web might depend on several factors, such as personal ability, computer experience, and how e-businesses present their sites. This study assumes that within each product category, if customers' perceived non-monetary effort increases, their dissatisfaction will also increase.

H2. Customers' dissatisfaction increases as the customers' information search effort increases, in the same product category.

H2a. The impact of the information search effort on customers' dissatisfaction will be higher with sensory products than non-sensory products.

Ego involvement was considered as another component of the importance of the purchase in the studies of customer dissatisfaction and complaining behavior (Landon, 1977). According to Landon (1977), customers who are highly ego-involved with a product are more likely to believe that discrepancies between performance and expectation are important. Kraft (1977) has

hypothesized that consumers who believe that a firm intentionally deceived them or acted to dissatisfy them will be more likely to complain than those without this perception.

The degree of customers' search effort is also related to the degree of ego involvement in prior purchase decisions. If customers have low involvement with the products that can satisfy the perceived need, they exert little effort in the information search; in a state of high involvement, the consumer may be more willing to seek out detailed information through product trial experiences (McGaughey and Mason, 1998). More involved online customers might be satisfied more since hyperlinks to detailed product specifications, pictures, testimonials, and e-mail addresses can be provided through the company Web page (McGaughey and Mason, 1998).

Cardozo (1965) speculated that dissonance would prevail in purchases of high involvement and substantially expended effort. Customers' disparity will increase as they do not have satisfactory outcome. Moreover, the impact of disparity will increase if they involve more with the purchase. This study proposed that within product category, as customers' involvement increase, customers' dissatisfaction will also increase.

H3. Customers' dissatisfaction increases as the customers' ego involvement increases, in the same product category.

H3a. The impact of the ego involvement on customers' dissatisfaction will be higher with sensory products than non-sensory products.

Figure 1 shows that the degree of dissatisfaction affects customers' propensity to complain.

Propensity to complain is used in this study, because it has been operationally linked to past complaint actions as a proxy for the inclination of consumers to complain (Bearden *et al.*, 1979; Gronhaug, 1977; Zaltman *et al.*, 1978). Previous studies described propensity to complain as an effort to summarize the personality, attitudinal, and lifestyle variables that influence whether a person will seek to obtain redress or complain when dissatisfied and also have an effect on the nature of the action to be taken (Bearden *et al.*, 1979; Day and Landon, 1977). Previous studies (Bearden *et al.*, 1979; Cho *et al.*, 2001) also found that the degree of dissatisfaction has a positive effect on customers' intention to complain. This study measures how the degree of dissatisfaction affects the propensity to complain by the product category on the Web. This study proposed that the impact of dissatisfaction on customers' propensity to complain is higher as the product has sensory attributes than non-sensory attributes.

H4. The impact of dissatisfaction on the propensity to complain will be higher with sensory products than non-sensory products.

3. Methodology

Survey data were collected both online and offline. For the offline data collection, mostly graduate students were selected from two major universities on the east coast. The study also collected data via online sites, which was designed for this study. A total of 390 respondents (329 from offline data collection; 61 from online data collection) responded to questionnaire. In order to select appropriate data, this study used first and second screenings. For the first screening, subjects who had a dissatisfied experience recently online were selected. For the second screening, subjects whose main sources of information regarding the product with which they were dissatisfied are mainly online were selected. The remaining subjects after these screenings, were asked to continue to fill out a questionnaire describing their negative experiences and complaining behavior resulting from dissatisfaction over a purchase made on the Web.

Because the study asked subjects about their worst dissatisfied online shopping experiences for any type of product, subjects' answers were from a variety of products, such as books, airline tickets, camcorders, etc. If subjects reported their dissatisfaction with suits, for example, that were bought on the Web, the data for these subjects were coded as "sensory products", while their dissatisfaction with books, for example, the data were coded as "non-sensory products". Subjects were selected from the graduate students in two major universities on the east coast. The categories of the products were coded qualitatively, and inter-coder reliability between coders was 0.87.

4. Analysis of data

After the first and the second screening process, 72.5 percent of subjects (270 – 219 from offline data and 51 from online data) remained in this analysis. This study used chi-square to test for differences between the data collected from offline and online sources. The study tested whether there are significant differences for each demographic. The chi-square result for "gender" differences found that there is no significant difference between the data from two different sources, online and offline (Chi-square = 0.810; $p = 0.366$). The study also found that there is no significant difference between the "age groups" (Chi-square = 0.924; $p = 0.921$). The chi-square analysis of "educational level" also concluded that there is no significant difference (Chi-square = 3.128; $p < 0.536$). Chi-square analysis results for the "income" (Chi-square = 7.854; $p = 0.171$) and "cultural background" (Chi-square = 5.076; $p = 0.406$) also showed that there are no significant differences between the two data sets. Based on the considerations above, this study combined the two sets of data, collected offline and online, and analyzed them as one data set.

Of the 270 respondents from the data collected offline and online, 56.1 percent were male and 43.9 percent were female. About 38.8 percent were between the ages 18-24; 39.1 percent were between the ages 25-30; 19.1 percent

were in the 31-40 age group; 1.8 percent were in the age group 41-50; and 1.2 percent were age 51 or older. Approximately 17.8 percent reported that their highest educational level was high school graduate, while 7.3 percent had an associate degree, 35.5 percent were college graduates, and 19.2 percent had done graduate work. More than 60 percent had an annual average income between \$20,000 and \$59,999. Of the respondents, 50.3 percent were Asian/Asian-American, 23.5 percent were White-American, and 7.5 percent were Black/African-American (see Appendix, Table AI).

The item scales and optional variables were tested in a pilot study, 128 responses were analyzed for the pilot study and the results were applied to develop operational variables and the validity of the study. The item scales were based on previous studies (Bearden *et al.*, 1979; Blodgett *et al.*, 1997; Richins and Dover, 1983) and modified in the context of this study. All items are operationalized as a seven-point semantic scale. For example, propensity to complain is operationalized as a composite of a scale, whose items reflect individual intentions to complain and the perceptions of each respondent's complaining history similar to those described by Bearden *et al.* (1979 and Fishbein and Icek (1975).

This study employed principal components analysis as an extraction method, while varimax with Kaiser normalization was used as a rotation method. Varimax rotation method was applied because the correlations between factors are low with oblique rotation method. Factor analysis was conducted to select the best set of questionnaire items for variables. Tables I-III shows the results of factor analysis. The obtained factor score was used for regression analysis.

Items	Component		
	1	2	3
Perceived price 2	0.817		
Perceived price 1	0.782		
Information search effort 1		0.824	
Information search effort 2		0.791	
Ego involvement 1			0.845
Eigenvalue	4.120	2.621	1.832

Table I.
Component matrix for independent variables

Items	Component 1
The degree of dissatisfaction 1	0.842
The degree of dissatisfaction 3	0.811
The degree of dissatisfaction 2	0.780
Eigenvalue	4.141

Table II.
Component matrix for dependent variable I

Table IV summarizes the constructs remaining after factor analysis was performed, and their overall means, standard deviations, and alphas for responses describing experiences on the Web. Cronbach's alpha typically indicates the reliability of construct measurement (Neter *et al.*, 1997). Cronbach alpha showed a range from 0.712 to 0.985, indicating high internal-consistency reliability for each construct. Overall, the mean value of the constructs is the lower with the non-sensory data, while it is higher with the sensory product data.

According to the analysis of correlation, this study found that inter-correlations among the items are high. Thus, it is concluded that observations and measures are consistent and stable (Richins, 1984). All the correlations between items for the same construct were significantly high,

Table III.
Component matrix for
dependent variable II

Items	Component 1
Propensity to complain 4	0.875
Propensity to complain 1	0.818
Propensity to complain 2	0.759
Eigenvalue	3.075

Table IV.
Means, standard
deviations, Cronbach
Alphas and list of items
by product category

Constructs and items	Non-sensory products	Sensory products
<i>The degree of dissatisfaction</i>		
How were you dissatisfied with the product quality?	Mean = 3.524	Mean = 6.012
Were you dissatisfied with the product information?	SD = 1.528	SD = 1.147
Overall, how dissatisfied were you with the purchase?	Alpha = 0.715	Alpha = 0.897
<i>Information search effort</i>		
I spent quite a lot of time searching for the product with which I was later dissatisfied	Mean = 4.201	Mean = 5.894
I compared the product with another product/ brand before I made the purchase quite a lot	SD = 1.211	SD = 1.124
	Alpha = 0.810	Alpha = 0.801
<i>Ego involvement</i>		
I was quite focused on searching for the product	Mean = 3.200	Mean = 5.221
	SD = 1.312	SD = 0.985
<i>Perceived price</i>		
I spent quite a lot of money on the product with which I wasn't satisfied	Mean = 3.890	Mean = 5.301
If a defective product is inexpensive, I usually keep it rather than ask for a refund or exchange	SD = 1.681	SD = 1.120
	Alpha = 0.712	Alpha = 0.814
<i>Propensity to complain</i>		
I am probably more likely to return an unsatisfactory product than most other people I know		
I would attempt to notify store management if I thought the service in a store was particularly bad	Mean = 4.752	Mean = 4.988
	SD = 1.398	SD = 1.191
If I am dissatisfied with a product, I will complain	Alpha = 0.887	Alpha = 0.781

while correlations among items for different constructs were low. This indicates a high level of discriminant validity (see Table V).

Regression analysis was conducted to analyze the relationship between the degree of dissatisfaction, dimensions – perceived price, information search effort, ego involvement and propensity to complain. Regression analysis was performed for each product category and standard coefficients from the analyses were used for comparison analyses. ANCOVA (Analysis of Covariance) was also applied in this study in order to examine the effect of product category on dissatisfaction. Those results of the ANCOVA, regression analysis and ANOVA were used to test hypotheses.

The study also used a dummy variable to test the differential effects of the product categories for the effect of perceived price on the degree of the dissatisfaction. Non-sensory products were used as the basis for the effects of dummy variable. Table VI presents the summary effects of the perceived price, information search effort, and ego involvement on the degree of dissatisfaction and also the effect of the degree of dissatisfaction on the propensity to complain based on the product categories.

The result of regression analysis indicates that the degree of the dissatisfaction was higher if the perceived price was higher. This impact scored higher with sensory product than non-sensory products. Thus, *H1* and *H1a* are accepted. Further, the results of ANCOVA showed that the impact of

	Price 2	Price 1	Information search effort 1	Information search effort 2	Ego involvement 1
Price 2	1.000				
Price 1	0.708	1.000			
Information search effort 1	0.069	0.110	1.000		
Information search effort 2	0.101	0.071	0.671	1.000	
Ego Involvement 1	0.120	0.131	0.201	0.124	1.000

Table V.
Correlation matrix among indicators

Effects	Standard coefficient	t-value (Sig)
The effect of the perceived price on the degree of dissatisfaction based on product category	0.782	13.594*
The effect of the information search effort on the degree of dissatisfaction based on product category	0.765	12.362*
The effect of the ego involvement on the degree of dissatisfaction based on product category	0.609	11.204*
The effect of the degree of dissatisfaction on the propensity to complain based on product category	0.794	13.901*

Table VI.
Summary of the effects based on product category

Note: *Significant at 0.01 level (two-tailed)

the perceived price on the degree of dissatisfaction was significant according to product category ($F = 3.108$, Eta-squared = 0.134, significant at 0.01 level).

The effect of the information search effort on the degree of the dissatisfaction depends on the product category (Table VI). The study found that online customers' degree of dissatisfaction increases as they put more effort into searching for information. Standard coefficients from regression analysis results proved that the impact of the information search effort on the degree of dissatisfaction was different according to product category. ANCOVA also tested and found that the impact of the information search effort on the degree of dissatisfaction was significantly different based on two different groups, which were classified by product types ($F = 3.812$, Eta-squared = 0.171; significant at 0.01 level). Based on the findings, $H2$ and $H2a$ are accepted.

The degree of ego involvement affects the degree of dissatisfaction (Table VI). The study found that online customers' dissatisfaction increases as their ego involvement in shopping increases. The Table presents the results of regression analysis for the impact of the ego involvement on the degree of dissatisfaction based on product category. The result of ANCOVA indicates that the impact of the ego involvement on the degree of dissatisfaction was significantly affected by product category ($F = 2.592$, Eta-squared = 0.161, significant at 0.01). Thus, $H3$ and $H3a$ are accepted in this study.

The effect of the degree of dissatisfaction on the propensity to complain also increased as the degree of the ability to judge the product category increased (see Table VI). That is, online customers' degree of dissatisfaction and their propensity to complain gets higher if the product has attributes that customers cannot easily evaluate on the Web. The results of ANCOVA also found that the effect of the degree of the dissatisfaction on propensity to complain was significantly different according to product category ($F = 3.694$, Eta-squared = 0.157, significant at 0.01). $H4$ is accepted.

Table VII summarizes the effects of the perceived price, information search effort, and ego involvement on dissatisfaction, and the effect of customers' dissatisfaction on the propensity to complain. The study accepted hypotheses for the main effects and also additional effects.

Effects based on product category	Significant	Size of effect from non-sensory to sensory products
Perceived price on the degree of the dissatisfaction	Significant	Increased
Information search effort on the degree of the dissatisfaction	Significant	Increased
Ego involvement on the degree of the dissatisfaction	Significant	Increased
The degree of dissatisfaction on the propensity to complain	Significant	Increased

Table VII.
Summary of the effects based on product category

5. Discussion

E-businesses have a limitation that customers cannot try, see, touch the product before it is delivered unless customers are already familiar with the products. Therefore, customers' buying behavior in the online shopping environment has been significantly affected by the product categories. This study used product categories, sensory vs non-sensory products, to find out the different impacts of online customers' ability to judge the product quality. This study attempts to analyse how customers' dissatisfaction and propensity to complain differ by different product categories on the Web. The study particularly used three variables, perceived price, information search effort, and ego involvement, which were frequently used as an "importance of the purchase" and also often studied with variables, customer dissatisfaction and propensity to complain. The study revealed that the impact of perceived price, information search effort, and ego involvement on the degree of dissatisfaction are significantly affected by product category. The results of this study also found that the effect of the degree of dissatisfaction on propensity to complain was significantly different based on product category on the Web. The findings imply that online customers are more dissatisfied with sensory products than non-sensory products as they spent more effort on searching the information on sensory products than non-sensory products; they involve more on purchasing sensory products than non-sensory products; and they cost more on sensory products than non-sensory products.

This study provides a question: How e-businesses with sensory products could improve their sales' profits and also enhance customer satisfaction by reducing customer complaints and dissatisfaction. The results of this study strongly suggest that e-businesses should employ product category-dependent strategies. Particularly, this study suggests that IS practitioners should develop a better system and managing tools to enhance customer satisfaction and/or user satisfaction on the Web. For example, those e-businesses dealing with sensory products (e.g. clothing, shoes, or cosmetics) need to develop better means of delivering product information to customers who obviously cannot touch, taste, or smell the object they are thinking of buying (Cho *et al.*, 2002). Online customers, who are interested in purchasing sensory products might spend more time searching the information, because customers hardly judge such products in the cyberspace. Therefore, e-businesses dealing with sensory products should put more effort into issues such as Web interface, design, and highly advanced technologies, etc. As Gangopadhyay (2001) suggested, e-businesses dealing with sensory products should focus more on an image-based system, which is an important characteristic for many products such as apparel, designer costumes, interior designs of homes, etc. An excellent example of using advanced Web features to achieve this goal can be found at landsend.com. The company helps customers build a three-dimensional mirror image known as "My Virtual Model™." Some companies also offer highly interactive communication tools to reach customer satisfaction and to achieve

customer relationship management (CRM). By providing a real-time chatting system, e-businesses dealing with sensory products particularly, could resolve the uncertainty about the products, so that online customers' satisfaction will be increased. At the same time, such effort might reduce customers' information search effort, so the impact of the information search effort on customer dissatisfaction with sensory products might be also reduced.

Moreover, this study suggests that online companies which sell sensory products should provide a high quality of customer services to fit customers' fastidious preferences. E-businesses with sensory products should enhance service quality in order to deliver clearer information on the product and also to handle customer complaints effectively after the purchase has been made. E-businesses with sensory products could employ new strategies, such as reimbursement of shipping costs if product quality does not meet customers' satisfaction. Those efforts might reduce the effect of the perceived price on customers' dissatisfaction, particularly with sensory products, as the effect was higher with sensory products than non-sensory products.

Further, e-businesses dealing with sensory products should also build brand reputation. Well-known brands or strong brand image trigger customers to purchase products with attributes that are not easy to judge on the Web. If customers become loyal to a certain store or brand on the Web, their information search effort to compare the products is expected to be reduced. Thus, by making such an effort, online companies dealing with sensory products can decrease customer dissatisfaction and complaints, while increasing customer satisfaction and loyalty.

There are some limitations of this study. Although this study found significant results according to product category, more detailed research on product category on the Web is required. This study classified products based on a previous study by Degeratu (2000) and coded them qualitatively. However, for future analysis, this study suggests that product classification on the Web should be studied with more rigorous theoretical framework. Moreover, a more sophisticated method will be applied to measure the degree of dissatisfaction by controlling the disparity between customer expectation which occurred in the prior purchase stage and the actual performance during the post-purchase evaluation stage. Further, more detailed variables, such as the level of information search effort based on customers' past experiences, will be considered in future analysis.

6. Conclusion

Despite the Web imparting substantial information in a convenient way, online customers are not always satisfied with their purchase. Customers take risks in their purchase decisions because they are not able to see the products. While customers differ in terms of their personal characteristics, skills, and purchase experience on the Web, making a purchase decision is not easy for all

customers, particularly if the product has attributes that are not easily evaluated on the Web. By applying the framework of the product category on the Web by de Figueiredo (2000), the findings indicate that the degree of customers' dissatisfaction and complaints differ according to the product categories. The study suggests that online businesses require strategies tailored to specific product categories in order to reduce customers' dissatisfaction and complaints, and enhance customer relationship management.

References

- Anderson, E.W., Fornell, C. and Lehmann, D.R. (1994), "Customer satisfaction, market share, and profitability: findings from Sweden", *Journal of Marketing*, Vol. 58 July, pp. 53-66.
- Bearden, W.O. and Teel, J.E. (1983), "Selected determinants of consumer satisfaction and complaint reports", *Journal of Marketing Research*, Vol. 20 February, pp. 21-8.
- Bearden, W.O., Crockett, M. and Graham, S. (1979), "Consumers' propensity-to-complain and dissatisfaction with automobile repairs", in Hunt, H.K. and Day, R.L. (Eds), *Refining Concepts and Measures of Consumer Satisfaction and Complaining Behavior*, Indiana University, Bloomington, IN, pp. 35-43.
- Bei, L. and Chiao, Y. (2001), "An integrated model for the effects of perceived product, perceived service quality, and perceived price fairness on consumer satisfaction and loyalty", *Journal of Customer Satisfaction, Dissatisfaction, and Complaining Behavior*, Vol. 14, pp. 125-40.
- Blodgett, J.G., Hill, D.J. and Tax, S.S. (1997), "The effects of distributive, procedural and interactional justice on postcomplaint behavior", *Journal of Retailing*, Vol. 73 No. 2, pp. 185-210.
- Cardozo, R.N. (1965), "An experimental study of customer effort, expectation, and satisfaction", *Journal of Marketing Research*, Vol. 2 August, pp. 244-9.
- Cho, Y., Il, I., Hiltz, S.R. and Fjermestad, J. (2001), "The effects of post-purchase evaluation factors on online vs offline customer complaining behavior: implications for customer loyalty", *Advances in Consumer Research*, Vol. 29.
- Cho, Y., Il, I., Hiltz, R. and Fjermestad, J. (2002), "An analysis of online customer complaints: implications for Web complaint management", *Proceedings of the 35th Hawaii International Conference on System Sciences*, January.
- Day, R.L. (1977), "Toward a process model of consumer satisfaction", in Hunt, H.K. (Ed.), *Conceptualization and Measurement of Consumer Satisfaction and Dissatisfaction*, Marketing Science Institute, Cambridge, MA, pp. 153-83.
- Day, R.L. and Landon, L.E. Jr (1977), "Collecting comprehensive consumer complaint data by survey research", in Anderson, B.B. (Ed.), *Advances in Consumer Research*, Vol. 3, Association for Consumer Research, Cincinnati, OH, pp. 263-8.
- de Figueiredo, J.M. (2000), "Finding sustainable profitability in electronic commerce", *Sloan Management Review*, No. Summer, pp. 41-52.
- Degeratu, A.M., Rangaswamy, A. and Wu, J. (2000), "Consumer choice behavior in online and traditional supermarkets: the effects of brand name, price, and other search attributes", eBusiness Research Center Working Paper, Penn State University, available at: www.ebrc.psu.edu/
- Engel, J.F., Blackwell, R.D. and Miniard, P.W. (1986), *Consumer Behavior*, 8th ed., Dryden Press, Hinsdale, IL.

-
- Fishbein, M. and Icek, A. (1975), *Belief, Attitude, Intention and Behavior*, Addison-Wesley, Reading, MA.
- Gangopadhyay, A. (2001), "An image-based system for electronic retailing", *Decision Support Systems*, Vol. 32, pp. 107-16.
- Gilly, M.C. (1979), "Complaining consumers and the concept of expectations", in Hunt, H.K. and Day, R.L. (Eds), *Refining Concepts and Measures of Consumer Satisfaction and Complaining Behavior*, Indiana University, Bloomington, IN, pp. 35-43.
- Gronhaug, K. (1977), "Exploring consumer complaining behavior: a model and some empirical results", *Advances in Consumer Research*, Vol. 4, pp. 159-65.
- Holbrook, M.B. and Howard, J.A. (1977), "Frequently purchased nondurable goods and services", in Ferber, R. (Ed.), *Selected Aspects of Consumer Behavior*, National Science Foundation, Washington, DC, pp. 189-222.
- Kiely, T. (1996), "The pleasures and perils of selling in cyberspace", Insights from Marketing Science Institute, Winter/Spring 1997. (Reprinted by permission of *Harvard Business Review* in Briefings from Editors, September-October 1996.)
- Kraft, F.B. (1977), "Consumer perceptions of business fraud: a key variable in complaint and repatronage behavior", paper presented at the Southwest Marketing Association Meetings, New Orleans, LA, March, pp. 23-26.
- Landon, E.L. (1977), "A model of consumer complaining behavior, consumer satisfaction, dissatisfaction and complaining behavior", in Day, R.L. (Ed.), *Papers from a Marketing Research Symposium*, Indiana University, Bloomington, IN.
- McGaughy, R.E. and Mason, K.H. (1998), "The Internet as a marketing tool", *Journal of Marketing Theory and Practice*, Summer.
- Murphy, P.E. and Enis, B.M. (1986), "Classifying products strategically", *Journal of Marketing*, July, pp. 24-42.
- Neter, J., Kutner, M.H., Nachtsheim, C.J. and Wasserman, W. (1997), *Applied Linear Statistical Models*, 4th ed., Irwin, Burr Ridge, IL.
- Oliver, R.L. (1980), "A cognitive model of the antecedents and consequences of satisfaction decisions", *Journal of Marketing Research*, Vol. 17, pp. 460-9.
- Olson, J.C. and Dover, P. (1979), "Disconfirmation of consumer expectations through product trial", *Journal of Applied Psychology*, Vol. 64, pp. 179-89.
- Richins, M.L. (1984), "The role of product importance in complaint initiation", *Consumer Satisfaction/Dissatisfaction and Complaining Behavior (Proceedings of the 8th conference, Louisiana State University)*, Baton Rouge, LA.
- Richins, M.L. and Dover, P. (1983), "An analysis of consumer interaction styles in the marketplace", *Journal of Consumer Research*, Vol. 10 June, pp. 73-82.
- Vavra, T.G. (1997), *Improving Your Measurement of Customer Satisfaction*, ASQ Quality Press, Milwaukee, WI.
- Westbrook, R.A. (1977), "Correlates of post purchase satisfaction with major household appliances", *Consumer Satisfaction, Dissatisfaction and Complaining Behavior*, pp. 85-90, (Papers from a Marketing Research Symposium, Indiana University, Bloomington, IN).
- Zaltman, G., Srivastava, R.K. and Deshpande, R. (1978), "Perceptions of unfair marketing practices", in Hunt, H.K. (Ed.), *Advances in Consumer Research*, Vol. 5, Association for Consumer Research, Ann Arbor, MI, pp. 263-8.

Appendix

The impact of product category

	Percent from offline data collection results (n = 219) (%)	Percent from online data collection results (n = 51) (%)	Average percent
<i>Gender</i>			
Male	59.3	52.9	56.1
Female	40.8	47.1	43.9
<i>Age</i>			
18-24	39.8	37.8	38.8
25-30	36.4	41.9	39.1
31-40	20.4	17.7	19.1
41-50	2.3	1.3	1.8
51 or over	1.1	1.3	1.2
<i>Education</i>			
High School Graduate	13.6	22.1	17.8
Associate Degree	6.8	7.8	7.3
Undergraduate Degree	65.3	41.6	54.5
Graduate Degree	13.2	25.3	19.2
Other	1.1	3.2	2.2
<i>Income</i>			
Less than \$20,000/year	12.1	2.8	7.5
\$20,000/year-\$39,999/year	30.3	28.9	29.6
\$40,000/year-\$59,999/year	24.2	34.1	29.2
\$60,000/year-\$79,999/year	10.6	12.8	11.7
\$80,000/year-\$99,999/year	6.1	6.0	6.0
More than \$100,000/year	1.7	1.4	1.5
<i>Cultural background (optional)</i>			
Asian/Asian-American	56.8	43.7	50.3
White-American	17.6	29.4	23.5
White-European	5.4	6.7	6.0
Black/African-American	6.8	8.2	7.5
Hispanic	5.4	5.2	5.3
Other	8.1	6.7	7.4

Note: n = 270

Table AI.
Respondents' demographics