PERCEIVED VARIABILITY AND PREPURCHASE EVALUATIONS OF GOODS VERSUS SERVICES

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Despite the considerable amount of literature documenting the fundamental differences between goods and services, little is known about how these differences affect consumer information processing in the prepurchase stage. The results of this study suggest that consumers perceive higher outcome variability for services than for physical products, and that in evaluating services, consumers generally engage in piecemeal processes, integrating all the feature information available, whereas in evaluating physical products, they use category-based processes, relying on a simple categorization cue (such as price). Implications of the results for consumer information processing and service marketing strategies are discussed.

INTRODUCTION

Services are receiving increasing attention as the U.S. economy becomes increasingly service-oriented. Recent statistics show that the service sector accounts for approximately 70% of national income and three-fourths of nonfarm jobs in the U.S. (Heskette 1987). The proliferation of services poses not only business opportunities but also competitive threats for many service marketers. One strategy suggested for the success of service firms is the delivery of quality services that satisfy consumers' needs and wants (Brown and Swartz 1989; Parasuraman, Zeithaml, and Berry 1988; Thompson, DeSouza, and Gale 1985). The delivery of quality services is also important from the perspective of consumer welfare (Koepp 1987). Then, how can a service company make sure that its services are perceived to be "quality services"? Answering this question requires an understanding of the way consumers evaluate services.

The existing literature has identified key dimensions that differentiate services from physical goods (Berry 1980; Lee 1989; Lovelock 1981; Shostack 1977; Zeithaml, Parasuraman, and Berry 1985), and has proposed that these dimensions would force consumers to rely on different cues and processes when evaluating services (Zeithaml 1981; Surprenant 1991). One of the fundamental characteristics of services that should affect consumer information processing is the variability or heterogeneity of service outcomes. That is, since services are essentially "people-based," and typically produced and consumed in the same period involving a high level of provider/client interaction, they depend on who provides them and when/where they are provided. Thus, the outcomes of services, unlike those of most manufactured goods, tend to be highly variable and perceived to be so. It has been suggested that the service variability would make the evaluation task extremely difficult especially in the prepurchase stage (Zeithaml 1981; Surprenant 1991). However, this should not imply that consumers do not engage in any types of prepurchase evaluations at all. Then, what types of cues and information processing strategies do consumers use when evaluating services? To date, little empirical effort has been made to answer the question.

The purpose of this paper is twofold: (1) to demonstrate that services are, in fact, perceived to be more variable than goods, and (2) to examine whether there are differences in the types of cues and processes consumers rely on when evaluating goods versus services in the prepurchase stage.

THEORETICAL BACKGROUND

Cognitive processes underlying evaluations of goods and services in general are discussed in detail on the basis of categorization literature (Cohen and Basu 1987; Fiske and Neuberg 1990; Fiske and Pavelchak 1986; Mandler and Parker 1976; Smith and Medin 1981). The literature suggests that people usually develop a number of categories of objects in an effort to organize and understand them. Categories contain instances (or *category members*) that are perceived

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similar or equivalent. People also develop a set of expectations about the features of a typical category member with respect to a particular category (called *category schema* or *category knowledge*), and an affective reaction to the category (called *category affect*). For instance, consumers who have an organized knowledge about automobiles may have a number of different categories of automobiles in memory along with their expectations and affect associated with each of the categories.

The literature further suggests that when people make their evaluative judgment of an object, they go through either one of two processes: sometimes they simply categorize the object and make their evaluation on the basis of the category affect (called a *category-based process*); other times they piece together their judgment on the basis of their evaluations of the individual attributes of the object (called a *piecemeal process*). A category-based process involves a direct transfer of affect associated with the original category to the overall evaluation, whereas a piecemeal process entails an integration of likings and dislikings of individual attributes of the object. Recently, in the consumer research area, a growing amount of evidence has indicated that these alternative modes of information processing also mediate product evaluations by consumers (Meyers-Levy and Tybout 1989; Sujan 1985; Sujan and Bettman 1989). For instance, consumers, who have encountered some pieces of feature information about a new model of *Honda* automobile, can base their overall evaluation of this particular model either on their own feelings about *Honda* automobiles in general (category-based process) or on their evaluations of the individual features of this particular model (piecemeal process). The literature also indicates that unless consumers find something different or atypical about a product, they use category-based processes (Boush and Loken 1991; Sujan 1985; Sujan and Bettman 1989). Thus, category-based processes seem to have priority over piecemeal processes; consumers try to use the former processes whenever possible. The rationale for this can be explained from a cognitive economy perspective; using pre-existing category knowledge to make judgments should be more efficient (i.e., easier and faster, if not accurate) than integrating piecemeal evaluations of individual product attributes (Fiske and Neuberg 1990; Fiske and Taylor 1984). Then, an important question is: How do consumers categorize a product? Or, what types of cues do consumers use to categorize a product?

Categorization literature assumes that people, when evaluating an object, would first try to categorize it on the basis of the most salient or accessible cue(s) in an effort to identify and understand it (Fiske and Neuberg 1990). Then, what is generally the most salient categorization cue(s) in product evaluation situations? Although there has been little research in marketing directly addressing this issue, a considerable amount of literature indicates that consumers often use price and brand name to judge the quality of a product (see Rao and Monroe 1989, and Dodds, Monroe, and Grewal 1991 for a review of studies on price and brand name effects). The literature implies that price and brand name are generally among the most dominant cues in product evaluation situations. Thus, it is believed that different price ranges and brand names, which are associated with corresponding category schemas, often serve as categorization bases. Specific hypotheses are developed in the following section in relation to the two types of evaluation processes discussed thus far.

HYPOTHESES

Perception of Variability

The central idea of this paper is that the fundamental differences between physical goods and services would elicit distinctive behavior on the part of consumers. One of such differences is the variability; outcomes of services are generally more variable or heterogeneous than those of goods (Berry 1980; Lee 1989; Lovelock 1981; Murray and Schlacter 1990; Shostack 1977; Zeithaml, et al. 1985). In other words, the same type of services offered even by the same service provider can vary across different situations in terms of quality and outcomes. In fact, consumers often get different service outcomes, if not different types, from the same service provider they used before, while they usually get the same benefit from the same brand of manufactured product. The variability of service outcomes results from the simultaneous production and consumption of services involving a high level of provider/client interaction. Since services are more variable than goods, they will be perceived to be so. Thus, it is hypothesized that:

H1: Consumers perceive higher variability for outcomes of services than for those of physical goods.

Prepurchase Evaluations of Goods versus Services

Categorization literature suggests that the processing of information about an object is influenced not only by the prototypical features (or central tendency) of the

category, but also by the perceived variability of the category on focal dimensions (Flannagan, Fried, and Holyoak 1986; Fried and Holyoak 1984; Linville, Fischer, and Salovey 1989; Park and Hastie 1987). For example, Park and Hastie (1987) found in their experiments that subjects, who perceived a category to be less variable, were more likely to classify a typical instance into the category and generalize from a typical attribute exhibited by the instance to the rest of the category, as compared with those who viewed the category as more variable. Their findings imply that consumers are likely to use category-based processes in their evaluations of manufactured goods because they generally perceive goods to be less variable than services (H1). They would use some categorization cues (such as price or brand name) as a basis for their evaluations of goods since they would believe that these cues are reliable indicators of quality. Thus, it is predicted that:

H2a: Consumers are more likely to engage in category-based processes when evaluating physical goods than when evaluating services before purchase.

On the other hand, consumers would not feel comfortable about making their evaluations of services based on simple categorization cues because they generally perceive services to be highly variable. Since they know that they can get different services from banks, motels, airlines, etc. even with same company names and service cost ranges, they would want to be more careful when evaluating services. Thus, they would use piecemeal processes, which entail evaluations of all the individual service features visible and available before purchase. In sum, it is expected that:

H2b: Consumers are more likely to engage in piecemeal processes when evaluating services than when evaluating physical goods before purchase.

METHOD

The hypotheses were tested in the context where consumers made their prepurchase evaluations of a product and a service with price (or cost of service) and specific feature information. Price was chosen and used as a categorization cue for the product and the service in the study because of its tenacious effects on product evaluations, as mentioned earlier. It was assumed that the product and the service would initially be categorized on the basis of their price or cost.

Selection of a Product and a Service

A pretest was conducted to select a product and a service category that covered similar price ranges. The assumption was that product/service categories with different price ranges should be associated with different category schemas (Herr 1989; Peterson and Wilson 1985); the intent was to avoid potential confounding of price ranges with the product/service type.

A total of 67 students enrolled in a marketing course were asked to provide the acceptable price ranges for various products and services. The results showed that the price of a pair of athletic shoes and the cost of a one-night stay at a motel per person covered the most similar ranges. Thus, athletic shoes and motels were selected for the main study, and their upper and lower price limits were determined to be $79.99 and $25.95. These prices were used as high and low price manipulations in the main study. The subjects were also asked to describe features of good and bad athletic shoes as well as services of such motels. Their descriptions were used to construct the study materials. Specifically, the materials consisted of not only the price of the product/service but also nine pieces of feature information, three of which were positive (e.g., "good ankle support" for athletic shoes and "good heating and cooling system" for motels), three were negative (e.g., "limited variety in size and design" for athletic shoes and "relatively small parking lot" for motels), and the remaining three were ambiguous and could be interpreted as either positive or negative (e.g., "It lasts one and a half years on the average." for athletic shoes and "a big window in the room" for motels).

Design

Each subject evaluated a pair of athletic shoes and a motel with price and feature information. Thus, the design was a 2 (price: high vs. low) X 2 (product: athletic shoes vs. motel) mixed factorial design, with price as a between-subject and product as a within-subject factor. The same nine pieces of feature information were provided across different price conditions. As mentioned earlier, the feature information items were put together such that they varied in terms of favorableness and relevance to the evaluation task. The intent was to create more realistic evaluation situations by making the overall configuration of the product information not suggestive of any particular direction on the favorableness and relevance dimensions.

Subjects and Procedure

A total of 92 students enrolled in business courses participated in the experiment for additional course credit. They were randomly assigned to each of the experimental conditions; cell sizes were 44 and 48. At the beginning of each session, they were told that the study was designed to measure their perceptions and feelings about a product and a service. In the first half of the study, they answered the questions about athletic shoes. They first filled in the variability measures of athletic shoes in general (see Appendix for the measures). Then, under a brief scenario which read, "Suppose you run into a pair of athletic shoes with the following features...," they were given stimulus information. They were asked to read the information with the purpose of forming an impression of the athletic shoes. When they finished reading it, they rated the quality of the product on a 9-point bipolar scale ranging from -4 = "very bad" to +4 = "very good." They then indicated their likings for the individual attributes on 9-point scales from "strongly like" to "strongly dislike." They also rated the importance of the individual attributes on 9-point scales from "not-at-all important" to "very important." The same types of questions and measures were used in the second half of the questionnaire on a motel. Finally, they filled in manipulation checks.

RESULTS

Perception of Variability

Hypothesis 1 predicted that consumers' perceptions of outcome variability would be higher for services than for goods. Since the three measures of perceived variability showed a high reliability (Chronbach alpha = .66), simple average ratings on these measures were used in the analysis. A pairwise comparison of the ratings on these measures indicated that the perceived variability of motels was significantly higher than that of athletic shoes (means = .42 and -.39 for motels and athletic shoes, respectively; $t[90] = 5.15, p < .001$). Thus, Hypothesis 1 was confirmed at least for the product/service categories tested in the study.

Effects of Price

The effectiveness of the manipulation of the price levels was checked by subjects' ratings on the question, "In general, is the price high or low for a pair of athletic shoes [a one-night stay at a motel per person]?" (rated on a 9-point scale with -4 = "very low" and +4 = "very high"). These ratings were submitted to a 2 (price) X 2 (product/service) mixed-design analysis of variance (ANOVA). As expected, price had a strong main effect on the ratings ($F[1,90] = 4.18, p < .05$). In addition, the simple main effects of price were significant for both product and service categories ($F[1,91] = 186.60, p < .001$ for athletic shoes; $F[1,91] = 111.00, p < .001$ for motels). Thus, the manipulation of the price levels was successful.

Hypothesis 2a and 2b proposed that the difference in perceived variability would give rise to the difference in information processing between goods and services. Specifically, Hypothesis 2a predicted that consumers would generally use category-based processes when evaluating physical goods. To test the hypothesis, a 2 X 2 mixed-design ANOVA was used with subjects' product/service evaluations as a dependent measure. The results revealed a significant interaction effect between price and product ($F[1,89] = 7.84, p < .006$). In addition, the simple main effect of price was significant for athletic shoes ($F[1,90] = 11.88, p < .001$), but non-significant for motels ($F[1,90] = .07, p > .79$).

Thus, the results, considered in totality, provided substantial evidence that subjects relied more heavily on price when evaluating athletic shoes than they did when evaluating motels. In other words, subjects engaged in category-based processes on the basis of price information when evaluating athletic shoes. Consequently, Hypothesis 2a was supported for the product/service categories tested in the study. The mean ratings on dependent measures across the experimental conditions are reported in Table 1.

Effects of Attribute Information

Hypothesis 2b predicted that consumers would generally engage in piecemeal processes when evaluating services. To test this hypothesis, the following procedure was employed. First, subjects' evaluations of product/service features were summarized using a weighted average rule (for supporting evidence of the averaging integration rule, see, e.g., Anderson 1965; Anderson and Birnbaum 1976). Then, multiple regression analyses were conducted to examine the simultaneous effects of price and attribute evaluations on product/service evaluations. As shown in Table 2, the regression coefficients of attribute evaluations were found to be significant only for motels, suggesting that subjects relied more heavily on service feature information when evaluating motels than when evaluating athletic shoes; they integrated their evaluations of motel services in a piecemeal fashion to reach their final

judgments. Note that the regression coefficients of price were significant only for athletic shoes, a finding consistent with the ANOVA results described above. Thus, Hypothesis 2b was supported for the product/service categories tested in the study.

THEORETICAL IMPLICATIONS

The present study demonstrates that consumers perceive motel services to be more variable than athletic shoes, and that they use piecemeal processes when evaluating the former while they rely on category-based processes when evaluating the latter. Although only one product and one service were examined in the study, the results provide significant insights into the cognitive processes underlying service evaluations in the prepurchase stage. Specifically, the results have the following theoretical implications.

First, the present results relate to the service quality literature (Bolton and Drew 1991; Brown and Swartz 1989; Parasuraman, et al. 1985, 1988). The literature is based on the gap theory, which proposes that perceived service quality is determined by the degree and direction of the gap between consumers' expectations and actual service performance. However, the existing literature is not clear about how consumers' expectations are formed in the pre-consumption stage. The present results suggest that consumers' prepurchase evaluations are formed on-line and serve as a basis for their expectations about the service provider's performance; then service quality is determined by the comparison between these expectations and service performance in a piecemeal fashion, as the gap theory suggests. In addition, the results imply that consumers' expectations are apt to change across service situations due to their perceptions of high service variability (Surprenant 1991).

Second, the findings of the study have an implication for consumer categorization literature. The literature identifies many factors that determine which of the two

TABLE 1
CELL MEANS

Dependent Measure	Athletic Shoes		Motel	
	Low Price	High Price	Low Price	High Price
Price Perception	-2.82	1.35	-1.25	2.23
Product Evaluation	.18	1.38	.53	.61
Company Evaluation	.06	1.79	.94	.51

TABLE 2
REGRESSION RESULTS: PRODUCT/SERVICE EVALUATIONS

Independent Variable	Athletic Shoes		Motel	
	Coefficient	*t*-value	Coefficient	*t*-value
Price	.35	3.48^{***}	.03	.33
Attribute Evaluations	.15	1.52	.34	3.42^{***}
R^2		.16		.12
F		8.20^{***}		25.87^{**}

$^{**} p < .01$, $^{***} p < .001$

types of processes (i.e., category-based and piecemeal processes) is used under various evaluation conditions (Meyers-Levy and Tybout 1989; Sujan 1985; Sujan and Bettman 1989). Sujan (1985), for example, found that the alternative modes of processes were used depending on the match or mismatch of product information to category schema, with a match inducing category-based reactions. The results of this study suggest that the degree of outcome variability of product categories can elicit different types of information processing, with lower variability triggering category-based processes.

Third, the present results relate to the price-perceived quality literature, which suggests that there is a positive relationship between price and perceived quality; that is, consumers often use price as an indicator of product quality (see Monroe and Dodds 1988, and Rao and Monroe 1989 for a review). However, the universality of the positive relationship does not seem to be tenable as more and more studies have demonstrated that consumers' reliance on price as a quality sign depends on situational or individual factors (e.g., Rao and Monroe 1988). The results of this study indicate that consumers' reliance on price may differ between goods and services due to the inherent differences between them; consumers usually rely more on price when evaluating goods than when evaluating services since the perceived quality variations in terms of price are less for goods than for services.

MANAGERIAL IMPLICATIONS

The present findings have important implications for service marketers. The service marketing literature suggests that since services are relatively intangible in comparison with most manufactured goods, service companies should strategically manipulate "tangible" cues (such as architecture of company buildings, organizational image, etc.) to differentiate their services (Berry 1980). The assumption underlying this suggestion is that service companies would be able to induce consumers to use category-based evaluation processes for their services based on a positive image associated with such simple, tangible cues. The results of this study, however, give a caveat to such a strategic recommendation; due to the high variability of services, consumers are likely to consider *all* the visible cues and service feature information available in prepurchase service evaluations. In other words, the scope of service information that consumers process must be larger than that suggested by the literature. In this sense, the present results underscore the importance of physical surroundings or environmental features to the creation of favorable service impressions (Bitner 1986; Booms and Bitner 1982; Ward, Bitner, and Barnes 1992; also see Bitner 1992 for a review).

The variability of service outcomes is a problem both from consumers' and from service providers' perspectives. Consumers need to spend more time and energy when evaluating services than when evaluating goods; service providers cannot know for sure that their services are delivered in a manner consistent with the way they were planned. When the variability of services is very high and this causes major problems to a company, the company should put special emphasis on quality control and try to standardize its services. Standardizing a service may actually increase customer satisfaction with speed, consistency, and price savings. Only when a company establishes its name with consistent, high quality services, will it be able to differentiate its services by providing simple categorization cues.

FUTURE RESEARCH

Future research is needed to determine the generalizability of the current findings. The hypotheses should be tested with a variety of settings and subject populations. One immediate extension of the current study would be to incorporate other cues such as brand/company name into the current research framework. An interesting issue to be investigated is whether the effect of service company name would override the effect of service feature information on service evaluations. Future research should also examine different types of product/service categories to determine the robustness and boundaries of the present results.

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APPENDIX

VARIABILITY MEASURES (Chronbach alpha = .66)

1. I get the same benefits from (the product/service) every time I use _____.
2. The benefits that I get from using _____ are consistent over repeated uses.
3. I am 100% sure of the level of benefit I will get by using _____ even before I use _____.