ABSTRACT

Based on prospect theory and classic satisfaction-dissatisfaction paradigm, the relationship between product purchase price and customer satisfaction is investigated by using online customer review score. The moderating effect of household income and brand equity is also considered and examine. We argue that the negative relationship between price and customer satisfaction is weakened as household income and brand equity increases. Empirical results support the positive moderating effect of brand equity. Our findings indicate that brand equity should be considered in the research about the effect of price on customer satisfaction. The theoretical and practical implications are also discussed.

KEYWORDS: Brand Equity, Customer Satisfaction, Price, Prospect Theory

INTRODUCTION

Customer satisfaction has been one of the important issues for companies to build customer loyalty and in turn, to increase firm’s growth and profitability (Kurt et al, 2006; Anderson et al., 1994; Ittner and Larcker, 1998). Empirical studies have proved the significant association between customer satisfaction and firm’s profitability (Anderson et al., 1994; Ittner and Larcker, 1998), customer loyalty (Hallowell, 1996; Matzler et al., 2006). Customer value is one of those important factor would affect customer satisfaction (Zeithaml, 1988), which is defined as "consumer's overall assessment of the utility of a product based on perceptions of what is received and what is given". Since the price and product quality directly relate to consumer's value (Fornell et al., 1996; Lam et al., 2004; Monroe, 1990), the effect of price has drawn much attention of marketing scholars.

Prospect theorists argued that loss aversion exhibited by consumers would explain the effect of gain or loss on customer satisfaction (Kahaneman and Tversky, 1979; Anderson and Sullivan, 1993; Bolton and Lemon, 1999). The general argument is that the negative performance or service would incur more negative customer satisfaction than the positive performance or service quality. The price acts significantly in consumers' evaluation of services received (Bolton and Lemon, 1999). For example, Bolton and Lemon (1999) found that price disconfirmation has significant effect on customer satisfaction. Varki and Colgate (2001) found that favorable price perception have a positive effect on overall customer satisfaction. Other scholars have been
using the notion of internal reference price to explain the relationship between price and consumer satisfaction (Thaler, 1985). The basic logic is that the effect of price on customer satisfaction is based on the competitive prices or past prices (Kalyanaram and Winer, 1995; Keaveney, 1995). Keavney (1995) found that customers tend to switch services if the price of service exceeds consumers' internal reference price.

Classic customer satisfaction-dissatisfaction paradigm (cf. Oliver, 1996) argued that customer satisfaction is affected by difference between actual performance and expected performance of products or service. This paradigm has been used to explain the effect of price on customer satisfaction (Lam et al, 2004; Monroe, 1990). Price-quality ratio is used as the indicator of the tradeoff between loss and gain or actual performance and expected performance to explain the effect of price on price satisfaction (Fornell et al., 1996; Kurt et al., 2006).

Both prospect theory and satisfaction-dissatisfaction paradigm address the comparison between gain and loss or the actual performance and expected performance. Unfortunately, prior research about the effect of price on customer satisfaction neglected the influence of customers, which is not consistent with the findings of the effect of customers on customer satisfaction (Hallowell, 1996; Zeithaml, 1985; Homburg and Giering, 2001). Prior research indicate that the effect of household income on customer loyalty could be positive or negative (Hallowell, 1996; Homburg and Giering, 2001). Moreover, brand equity also could influence customer loyalty and price satisfaction (Lassar et al., 1995; Aiwadi et al., 2003).

In this study, we undertake such an investigation by developing a model that incorporates both price and customer effects on customer satisfaction and testing it with data from online customer review score. Our study is attempting to investigate how customer's particular situation or characteristics (household income) and brand equity could affect the relationship between price and customer satisfaction. Although prior research has found the negative relationship between price and customer satisfaction (Cao and Gruca, 2009), the incorporation of customers' income would be quite necessary in the sense that household income would moderate the relative cost of customer in buying the product. In addition, we are examining how the brand equity would affect the satisfaction effect of price.

LITERATURE REVIEW

Prospect Theory

According to prospect theory, consumers exhibit loss aversion and the effect of losses is larger than gains (Einhorn and Hogarth 1981; Kahneman and Tversky 1979). Mittal, Ross, and Baldasare (1998) used prospect theory to explain why consumers react more strongly when services underperform on an attribute (a loss) than when services over perform on some attribute (again). Anderson and Sullivan (1993) used prospect theory to explain why negative disconfirmation (loss) has a stronger influence on customer satisfaction than positive disconfirmation (gain). In Bolton and Lemon (1999), prospect theory is used to explain the asymmetric effect of service failures (loss) and service recovery efforts (gain) on consumers’ ongoing assessment of the service provided. In this vain, the price is a monetary cost for consumers. Then, prospect theory would indicate that price paid would be salient in consumers’ evaluation of services (Bolton and Lemon 1999). Bolton and Lemon (1999) found that price disconfirmation, payment equity, and actual price (measured in dollar terms) to have a significant effect on overall customer satisfaction in the entertainment and cellular phone industry. The payment equity is defined as the perception of price in terms of fairness or unfairness. Varki and Colgate (2001) found that favorable price perceptions have a positive effect on overall customer satisfaction. In addition, according to Mittal, Ross, and Baldasare’s
Wang et al. (1998) conclusion that negative valenced information can elicit a stronger physiological response than positive information, high price would be a negatively valenced information which would lead to customer’s switching service.

Based on the central notion of prospect theory, consumers encoded losses or sacrifices with respect to internal reference price (Thaler, 1985). According to the marketing literature, consumers recognize prices as being high or low based on their internal reference points which are established on competitive prices or past prices (Kalyanaram and Winer, 1995; Biswas and Blair 1991; Rajendran and Tellis 1994). Keaveney (1995) found that customers tend to switch services if the price of service exceeds consumers’ internal reference price. Then, Bolton and Lemon (1999) considered reference prices as being fair or unfair, which, in turn, would affect consumers’ overall satisfaction in the cellular phone and entertainment industries. It would be reasonable that the internal reference price of consumers could be shaped by the competition and the perception of price relative to competition’s price then affect the consumer’s perception of price in terms of fairness. There are some research about the effect of consumers’ perceptions of a comparatively priced product’s pricing and value on consumers satisfaction (Compeau and Grewal, 1994; Grewal et al., 1996). Some relevant research has investigated the effect of price fairness on price perception (Campbell, 1999), the effect of the price-quality relationship (Fornell et al., 1996) or the effect of price perception on satisfaction and behavior (Keaveney, 1995; Varki and Colgate, 2001).

Customer Satisfaction-Dissatisfaction Paradigm

According to the classic customer satisfaction—dissatisfaction paradigm (cf. Oliver 1996), consumers’ satisfaction is affected by the consumers’ predictive expectations, performance and disconfirmation. Bolton and Lemon (1999) propose that the customer's perception of payment equity and his or her comparison of actual payments with normative expectations will influence satisfaction. And they also argued that the customer's assessment of satisfaction depends on the difference between his or her payments and the budgeted amount (operating through perceived control), as well as on absolute price levels.

Lam et al (2004) argued that the disconfirmation-of-expectations paradigm ignore the sacrifice component and the reduction in price may affect customer satisfaction if benefits is reduced. So, customer satisfaction is the result of a customer’s perception of the value received in a transaction or relationship (Heskett et al. 1997). Lam et al (2004) found that Customer value has a positive effect on customer satisfaction. Here, customer value is considered as a cognition-based construct capturing any benefit-sacrifice discrepancy. Cronin et al (2000) reviewed several definitions of customer value. But, Zeithaml ‘s (1998) definition is widely applied. She defines perceived value as “the consumer’s overall assessment of the utility of a product based on perceptions of what is received and what is given” (Zeithaml, 1988). Monroe (1990) argues that customers’ perception of value is a trade-off the service they received and the price they paid. So, Lam et al (2004) tested the effect of price-quality ratio on consumer’s satisfaction and found that favorable price-quality ratio (i.e. high customer value) will enhance customer satisfaction.

In the research of price-quality ratio, several scholars have investigated the relative impact of quality and price on customer value has been the focus of several theoretical and empirical studies. Fornell et al. (1996), for instance, investigated the impact of price and perceived quality on overall satisfaction in various industries. In each of the sectors examined, price plays an important role. In some cases, price is more important than perceived quality. For example,
Fornell et al (1996) found that in sector I (Manufacturing/Nondurables), price is more important than quality, since this sector is toward price-based competition, in which price competition is fostered by the availability of low-priced house and generic brands and discount retailing. And in the industry of Transportation/Communication/Utilities, the price is also very important to customers' satisfaction, since it's relatively commodity-based and price play a correspondingly important role. However, in other industries, the quality is more important than price. For example, In the sector of Manufacture/Durable, Services, the high involvement and customized nature of the products involved makes quality more important. Also the location-driven nature of retail and “take it or leave it” nature of pricing of Public Administration/Government make the quality is more important than price in those two industries. Here, Fornell et al (1996), the price-versus quality-driven satisfaction ratio is calculated as the impact of a one-point change in perceived value on overall customer satisfaction divided by the total effect of a one point change in perceived quality on overall customer satisfaction.

Kurt et al (2006) found that the price-quality ratio, relative price, and price fairness positively related to overall price satisfaction. They argue that the perceived price-quality ratio has a direct influence on price perceptions and, in turn, on price satisfaction. When the price-quality ratio is favorable, customers will be satisfied with the price. Most interestingly, Kurt et al (2006) investigated the effect of relative price on consumer's price satisfaction and overall satisfaction.

Most relevant research for my project is the paper of Cao and Grca who found that price has a negative impact on satisfaction with the pre-purchase experience and satisfaction with the post-purchase experience. In this paper, Cao and Grca applied the Customer satisfaction—dissatisfaction paradigm, which defined customer satisfaction in terms of the comparison between the customer’s expectations regarding a product, service or experience and the actual performance that the customer encounters (e.g., Oliver, 1981). Since price is often used to formulate performance expectations. Consequently, high prices would lead to high expectations. Under the situation of two e-retailers with equal performance, customers will be more satisfied with the e-retailer that has lower prices. Since it is expected there to be larger differences in prices across e-retailers than variations in performance, it is expected there to be a negative effect of price on pre-purchase satisfaction (Cao and Grca, 2009). If an e-retailers is perceived by customers to have consistently higher prices, this may be perceived as being unfair since the identical item is available elsewhere at a lower price (Sinha, 2000). Following Bolton and Lemon (1999), such perceptions of unfairness should lead customers to be less satisfied with the price they pay from higher priced e-retailers.

HYPOTHESES DEVELOPMENT

Price and Customer Satisfaction

Based on prospect theory, the effect of losses is larger than gains and consumers exhibit loss aversion (Einhorn and Hogarth 1981; Kahneman and Tversky 1979). This statement has been proved to be true under different situations, such as service performance, purchase disconfirmation and service failures or recovery (Mittal, Ross, and Baldasare 1998; Anderson and Sullivan, 1993; Bolton and Lemon, 1999). Under the scenario of product purchase, the price is a monetary cost for customers. Bolton and Lemon (1999) found that customers would be more satisfied if the price and usage exchange is more equitable. In our study, same product could be priced differently. Then, the price would be the factor that affect customer satisfaction, given the same equity for one product. Variki and Colgate (2001) found that favorable price perceptions have a positive effect on overall customer satisfaction. In addition, internal reference price is considered as the scale that consumers use to evaluate losses or gains.
Product price is regarded as fair or unfair based on the internal reference price which could be acquired from the competitive prices or past prices (Kalyanaram and Winer, 1995; Biswas and Blair 1991; Rajendran and Tellis 1994). In our study, comparison of different prices from different websites could shape the internal reference price of customers, in turn, would give customers different perceptions of price fairness. As price increases for one product, customers tend to consider the price as unfair, which, in turn, would be perceived by customers as loss. Then, customers tend to less satisfied, which would decrease the review score.

From the customer satisfaction-dissatisfaction paradigm (Oliver, 1996), consumer’s satisfaction would be affected by the difference between actual performance and predicted performance. The disconfirmation of performance would lower customers’ satisfaction. Bolton and Lemon (1999) argued that the customer's assessment of satisfaction depends on the difference between his or her payments and the budgeted amount (operating through perceived control), as well as on absolute price levels. As price increases for the same product, customer would expect better performance for the product with higher price. However, one particular product most likely behaves similar. The difference between expected performance and actual performance is greater than that with lower price. So, the big difference would incur lower customer satisfaction. Lam et al (2004) argue that the price quality ratio would be a better way to capture the perceived value of products customers receive and they found that customer value positively affect satisfaction. As product price increases, the price quality ratio moves toward unfavorable for one particular product. Then, customer satisfaction would be driven low. According to the findings of Cao and Gruca, higher price is perceived as being unfair since the identical item is available elsewhere at a lower price (Sinha, 2000).

**Hypothesis 1:** There is a negative relationship between price and customer satisfaction

**The positive moderating effect of household income**

The effect of income on customer loyalty has been investigated. But, the findings are not consistent. For example, Hallowell (1996) found that household income positively affects customer loyalty. However, some scholars found opposite effect of household income and they argue that the flexibility and more options in shopping that higher-income consumers have than lower-income consumers would make high income consumers less loyalty (Crask and Reynolds 1978; Korgaonkar, Lund, and Price 1985; Zeithaml, 1985). Recently, Homburg and Giering (2001) found that the relationship between satisfaction and loyalty is weaker for people with high income and they reasoned that as the result of low risk associated with the purchase of poor quality products. Cooil et al (2007) found the similar results.

There are two explanations about the effect of income on customer loyalty. One argument is that customers with high income would perceive the cost of time (Farley 1964; Marmorstein, Grewal, and Fishe, 1992; Murthi and Srinivasan, 1999). Higher income consumers tend to make purchase decision based on limited information and evaluation, in order to save the cost of time. So, as Sharir (1974) argued, customers with high income would make quick decision and tend to stick to one certain product category and customer loyalty would increase. On the other hand, As Sharir (1974) argued that limited information and evaluation of product before purchase would end up with random purchasing, which, would lead to low brand loyalty. Shankar et al (2003) also argue that Customers with lower discretionary incomes would be willing to do more price comparisons and be less loyal to a service provider than those with higher incomes .So, the effect of household income on loyalty could be positive or negative.

In our study, the price would negatively affect customer satisfaction. As consumer income increases, consumers tend to be less price sensitivity. Then, they may prefer to make quick buying decision and buy it without making a price comparison. Then, they stick to it. Under this situation, consumers would be more satisfied with their choice with high loyalty. However, as
consumer household income decreases, they would be more careful about their buying choice, since they have less opportunities for diverse financial products. Consumer with low income would tend to make more price comparison and choose the one with favorable price-quality ratio. The restrict performance evaluation of product after purchase would lower consumer satisfaction. So, household income would positively affect the effect of price on consumer satisfaction.

Hypothesis 2: The negative relationship between price and customer satisfaction is weakened as household income increases.

The moderating effect of Brand Equity

The concept and implication of brand equity has been discussed in the marketing area (Leuthesser, 1988; Lassar et al, 1995; Erdem and Swait, 1998). Brand equity can be defined either from consumer perspective or from the firm perspective. From the consumer perspective, brand equity is defined as brand strength and brand value resulting from the brand name which would shape customers’ perception of products’ utility and in turn, affects customer’s loyalty (Lassar et al, 1995). From the firm perspective, brand equity is defined as the incremental cash flow by the product with the brand name (Lethesser, 1988). From the firm perspective, brand equity could be measured as volume, revenue or profit (Ailwadi et al, 2007). Aiwadi et al (2007) constructed the revenue premium as an outcome measure of brand equity and validated it by comparing with other measurement of brand equity. In addition, they also examined and found that this measure of brand equity had the up versus down asymmetric effect on price elasticity, meaning that high-revenue-premium brands gain share when they decrease price, but lose little when they increase price. They argue that high brand equity would make consumers less sensitive to price increases, in turn, would make significant sales gains. From the proposed signaling perspective, Erdem and Swait (1998) consider the imperfect and asymmetrical information structure of the market and argued that the credibility of the firm could be used by customers to evaluate brand equity when consumers are uncertain about the product attributes or performance. By using survey data on jeans and juice, Erdem and Swait (1998) proved their perspective.

In this study, the brand revenue is considered as the construct of brand equity, based on the previous research discussed above. As the brand revenue increases, customers would evaluate the attributes or the performance of the product would be better. Then, consumers tend to be less price sensitivity, which would alleviate the negative effect of price on consumer satisfaction. In addition, according to the effect of price-quality ratio of product on satisfaction, quality would be perceived better by consumers when brand equity increases. Then, price-quality ratio would be more favorable, which would lead to higher consumer’s satisfaction (Lam et al, 2004; Cao & Gruca).

Hypothesis 3: The negative relationship between price and customer satisfaction is weakened as brand equity increases.
METHODOLOGY

We randomly selected seven products from two online websites with different prices. The review scores from each customer for each product is recorded. Based on the state information of customers, we collected the geographic characteristics of each customer. According to the availability of customer review and comments, we got 1845 observations from two websites across all seven categories. Since our dependent variable is customer satisfaction which is measured as online review score from 1 to 5, ordinal logistic model is appropriate for our study.

Model

\[
\text{ReviewScore} = \alpha + \beta_1 \text{price} + \beta_2 \text{Revenue} + \beta_3 \text{HouseholdIncome} + \beta_4 \text{PriceXRevenue} + \beta_5 \text{PriceXHouseholdIncome} + \beta_6 \text{Website} + \beta_7 \text{Population} + \beta_8 \text{UnemploymentRate} + \beta_9 \text{Education} + \\
\beta_{10} \text{Products} + \beta_{11} \text{AnnualPay}
\]

Construct Operationalization

Our dependent variable is customer satisfaction which is measured as customers’ review score with scale from 1 to 5. The largest score (5) indicates that customer is most satisfied with that product. Independent variables include price, household income and brand revenue. Price is measured as the purchase price of the product labeled from the websites. Household income is measured as the income for one family. Revenue is measured as the sales of the product brand. Control variables include website, population, unemployment rate and annual pay. Website is coded as 1 if the website is bestbuy.com and is coded as 0 if the website is amazon.com. Population is measured as the population of the customer’s state. Unemployment rate is measured as the unemployment rate of the customer’s state. Annual pay is measured as the average purchase expenditure of each family in different states.

Analysis and Findings

The descriptive statistics and correlation is reported in Table 1. Customer satisfaction, which is measured as review score, positively relates to revenue (\(b=0.14\), \(p <0.0001\)), household income (\(b=0.058\), \(p<0.05\)) and annual pay (\(b=0.054\), \(p<0.10\)), which is quite consistent with our initial argument. In addition, we find that customer satisfaction is negatively correlated with website (\(b=-0.12\), \(p<0.001\)), indicating that the effect of website on customer
satisfaction is significant and it’s quite necessary to control for it.

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Insert Table 1 about here

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In Table 2, the ordinal logistic regression results are reported. Model 1 only includes control variables. Model 2 includes control variables and main effects. Model 3 includes all control variables, main effects and interaction terms. From Model 1, we found that website significantly affects customer satisfaction (b=-0.662, p<0.001), meaning that there is general customer satisfaction associated with each website and the effect should be considered or controlled. From Model 2, we found that price is negatively affect customer satisfaction (b=-0.006, p <0.5), which is consistent with our expected. So, hypothesis 1 is supported. Moreover, we found that there is negative relationship between revenue and customer satisfaction (b=-0.007, p<0.10). This finding could be due to the revenue could be contributed to customer service in time, which would lead to the lagged negative effect of revenue. After adding interaction terms, we can see the results in Model 3. The revenue still negatively affects customer satisfaction (b=-0.060, p <0.01). In addition, the interaction term between price and customer satisfaction negatively related, which indicates that revenue positively moderates the relationship between price and customer satisfaction, which is consistent with our hypothesis 3. So, the results in Model 3 support hypothesis 3. However, the interaction term between price and household income is not significant, although the sign is consistent as what is expected (b=0.03, p>0.10).

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Insert Table 2 about here

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DISCUSSION AND CONCLUSION

According to prospect theory and customer satisfaction-dissatisfaction paradigm, we argue that the effect of price on customer satisfaction depends upon household income and brand equity which is measured as the brand revenue of the product. In order to test our hypotheses, we use online customer review score for seven categories from two large retail websites. We found that the price negatively affects customer satisfaction, which is consistent with hypothesis 1. In addition, we found that brand equity measured as the brand revenue positively moderates the relationship between price and customer satisfaction.
REFERENCES


