

THE EFFECTS OF PRODUCT SCARCITY AND CONSUMER'S NEED FOR UNIQUENESS ON PURCHASE INTENTION

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Abstract: Scarcity strategies are employed by marketers to influence consumer's decision-making. Famous brands like Louis Vuitton have designed and produced limited-edition products specifically to stress the unavailability of products, thereby intensifying the desire for owning the products and then motivating consumer's purchase intention. However, very rare studies simultaneously investigated the impacts of multiple mediating variables that sufficiently explain the value-enhancement of scarcity strategies. This study develops a comprehensive research model and uses SEM (Structure Equation Model) to fully understand how scarcity affects consumer's value perception and purchase intention. The research results include: (1) perceived scarcity has significant influences on perceived value and purchase intention through mediating variables-assumed expensiveness, perceived quality, perceived sacrifice and perceived uniqueness and (2) the effects of scarcity on purchase intention through perceived uniqueness, perceived sacrifice and perceived value are stronger than the scarcity effects through assumed expensiveness, perceived quality, perceived sacrifice and perceived value.

Keywords: *Scarcity, Assumed Expensiveness, Perceived Quality, Perceived Sacrifice, Perceived Uniqueness, Perceived Value, Purchase Intention*

RESEARCH MOTIVATION AND OBJECTIVES

H&M, a famous Swedish clothing company, has offered a limited supply of clothes designed by Stella McCartney that was sold out in a few hours. One of the major reasons for this is that McCartney only produced a very limited number of hand-embroidered coats. This stirred up consumers' buying intention they were willing to wait in line in an attempt to purchase the scarce products. Luxury brands such as Louis Vuitton and Hermes have long thrived on the thrill of scarcity. They produce limited-edition bags and women scramble to get on the waiting lists for these bags. These activities specifically stress the unavailability of products, intensify the desirability and motivate potential buyers to purchase products.

The phenomenon mentioned above illustrates one of the psychological effects of scarcity. Marketers view scarcity appeal as an important strategy (Brannon & Brock, 2001). Various products such as art paintings, automobiles, dolls, fashions, shoes, watches and wines are produced in limited quantities and are promoted as scarce, rare and hard to obtain (Lynn & Bogert, 1996). Marketers usually use phrases like "limited release," "only until supplies last," "limited time only," and "limited to one per customer" (Lynn, 1991). They have experienced that such statements increase consumers' value perceptions of products when evaluating offers (Cialdini, 1985). Consumers are told that unless they purchase immediately, they will not be able to purchase in the future.

Research and theories have been addressed to support the relationships between scarcity and consumers' perceptions of product offers. Brock (1968) proposes the commodity theory to explain scarcity effects on attitudes. This theory states that any commodity will be valued to the extent that it is unavailable. Verhallen (1982) and Verhallen and Robben (1994) find a greater preference for recipe books when they are perceived as scarce due to market forces. Similarly, Lynn (1989) reveals that paintings perceived as scarce are more desirable than paintings perceived as readily available. Lynn's (1991) meta-analyses show that scarcity enhances the value of anything that can be possessed. The more the scarce of a commodity, the more valuable or desirable it becomes. However, Lynn's (1989; 1991) analyses do not arrive at a definitive understanding of mediating mechanisms of effects. Thus this study attempts to provide an integrated mechanism for a detailed understanding of the value perception process of scarcity appeals.

In addition, Lynn (1992b) proposes the S-E-D model, suggesting that people believe scarce goods cost more, and that a higher price indicates higher quality and status to offer an explanation for scarcity's enhancement of desirability. On the other hand, the higher price may also have a negative effect on value through an increase in perceived monetary sacrifice (Monroe & Krishnan, 1985). However, the strength of these two competing forces is not clear. This results in another issue of this study. Besides, possessions are often extensions of the self (Belk, 1988), so consumers acquire scarce products to differentiate themselves from other people or to express feelings of self-uniqueness (Lynn & Harris, 1997b; Tian, Bearden, & Hunter, 2001). Snyder and Fromkin (1980) provide need for uniqueness theory to explain that people have a desire for maintaining a sense of uniqueness. However, the extent to which mediating mechanisms play a role in influencing consumer's purchase intention is not clear defined. Besides, none research has combined S-E-D model with need for uniqueness theory to investigate scarcity effects.

Previous studies recognize that scarcity effects have relationships with consumer behavior and the decision-making process. Thus, it is important for marketers to understand uniqueness attributes associated with scarcity for the purpose of developing marketing strategies. However, prior research examined the scarcity effects only by single statistical tests. In addition, only a small amount of research has been done to simultaneously consider the impacts of multiple mediating variables that sufficiently explain scarcity's value-enhancement (Couchen & San-san, 2006). This study tries to integrate multiple mediating mechanisms of scarcity to examine simultaneous impacts. Based on the above research background and motivations, the research objectives are illustrated as follows: (1) To verify the influences of perceived scarcity on perceived value and purchase intention through mediating variables-assumed expensiveness, perceived uniqueness, perceived quality and perceived sacrifice. (2) To examine the relationships between perceived sacrifice and perceived quality as well as perceived uniqueness. (3) To compare the relative importance of assumed expensiveness and perceived uniqueness on scarcity effects.

LITERATURE REVIEW

Definition of Research Variables

Scarcity tactics can be classified into two types: quantity limit and time limit. Quantity limit is a tactic in which the customer is informed that the product cannot be guaranteed to exist for long. Time limit is a deadline tactic which involves limiting the time period during which the product will be available (Cialdini, 1985). Previous applications of scarcity research include restrictions on quantity (Inman, Peter, & Raghubir, 1997; Lynn, 1991), and the time available to respond to a sale (Brannon & Brock, 2001). Inman, et al., (1997) reveal that when restrictions in available quantity are in place, participants prefer larger discounts, suggesting a thoughtful evaluation of the restricted offer. Similarly, Lynn (1991) views scarcity as unavailability, specially referring to limited supply. Recent research has also found that limited supply results in higher desirability or purchase intent towards the product (Jung & Kellaris, 2004). Based on Lynn's (1991) point of view, this study defines scarcity as quantity limit that products are provided in a limited supply.

Sacrifice describes what must be given up or paid to perform a certain behavior (Zeithaml, 1988). From the consumer's perspective, price is what he or she pays, in monetary terms, for acquiring a product. On the other hand, studies on consumer behavior indicate that other costs are also believed to be closely related to sacrifice (Wang, Lo, & Yang, 2004; Zeithaml, 1988). Zeithaml (1988) proposes that the sacrifice components involve monetary prices as well as non-monetary prices such as search costs, time costs and psychic costs. These costs are pertained to efforts, risks and insecurities related to an acquisition and use of a product. Besides, monetary costs and non-monetary costs are proved to have influences on purchase intention through overall evaluation deal (Wood & Scheer, 1996). Therefore, when making a decision with regards to purchasing scarce commodities, consumers certainly consider monetary costs and non-monetary costs, so this study defines perceived sacrifice as a combination of monetary prices and all other costs of product acquisition and use.

The concept of assumed expensiveness drives from Lynn's (1992b) S-E-D model (Scarcity-Expensiveness-Desirability model). His research on the role of naïve economic theories explains that assumed expensiveness associated with scarce things increases the desirability by increasing the attributed quality or perceived status of the commodities. Therefore, accordingly, this study defines assumed expensiveness as the degree to which the consumer believes that he or she must pay more money to acquire a scarce product.

The term perceived quality is defined as the belief in the overall goodness of what is received (Zeithaml, 1988). Hence, this study adopts Zeithaml's (1988) definition that perceived quality is the consumer's judgment about an entity's overall excellence or superiority. The concept of perceived value is defined 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, p. 14). Accordingly, this study adopts the definition of perceived value as the ratio or tradeoff between perceived quality and perceived sacrifice. Similarly, Monroe and Krishnan (1985) propose the price-perceived quality model which addresses the relationships among price, perceived quality, perceived sacrifice, perceived value and purchase intention. Consumer preferences or choices are decided by how consumers evaluate the quality of a product as well as the sacrifice.

Uniqueness attributes are features that are "valued because they define the person as different from members of his or her reference group and that, at the same time will not call down the forces of rejection and isolation for deviancy" (Snyder & Fromkin, 1980 p.107). They proposed need for uniqueness theory to state that people are motivated to maintain a sense of specialness. Therefore, in this study, perceived uniqueness is defined as the extent to which customers view the product as different from other products in the same category (Tian, et al., 2001). The concept of purchase intention has been widely used in literature as a predictor of subsequent purchase (Kumar, Lee, & Kim, 2009). Monroe and Krishnan's (1985) definition of willingness to buy is the intention to buy the product. Dodds, et al., (1991) view purchase intention as the likelihood that consumers intend to buy the product. Based on the above, purchase intention is defined in this study as the degree to which the consumer would like to purchase scarce products.

Relationship between Perceived Scarcity and Assumed Expensiveness

Based on economic theory, scarcity will increase prices because of its limited supply. This message is conveyed by market experiences. For example, in 1993 the first bucket of new herring caught and delivered in Netherlands was sold for over US\$ 33,000 on the traditional “Vlaggetjesdag”. As there was only one first bucket of fresh herring, it was extremely expensive. The retail price of a single herring later dropped to about US\$ 1.50 because it reflected the abundant availability of the commodity once the first catch had been sold (Verhallen & Robben, 1994).

Some researchers think that scarce commodities have higher prices because scarcity or unavailability can serve as a heuristic cue (Koford & Tschögl, 1998). Lynn (1989, study1) points out that scarcity enhances the desire for art prints, but only when subjects had previously been primed to think about the expensiveness of art prints in general. That is, the linkage between scarcity and assumed expensiveness has an influence on desirability. Similarly, Lynn’s (1992b) S-E-D model hypothesizes that people associate scarcity with assumed expensiveness based on a naïve economic theory. Couchen and San-san (2006) and Wright, et al., (2004) also support for the same assertion. Based on the above, the following hypothesis is suggested:

H1a: Perceived scarcity is positively related to assumed expensiveness.

Relationship between Perceived Scarcity and Perceived Uniqueness

Some product purchases referred to conspicuous consumption goods are characterized by satisfying owners’ social needs (Gierl, Plantsch, & Schweidler, 2008). One of social needs is the pursuit of uniqueness. Furthermore, one way to differentiate the self from others is by possessing unique products (Fromkin, 1970; Snyder, 1992). Snyder (1992) argues that the underlying engine that drives the catch-22 carousel is the sense of specialness per se that the scarce possessions impart to the self rather than to social status. To satisfy consumers’ pursuit of distinctiveness, scarce products become attractive options to communicate uniqueness (Amaldoss & Jain, 2005). According to Tian et al., (2001), the perceptions of uniqueness of a product are that customers view the product as different from other products. When a commodity is difficult to obtain, the perception of uniqueness would be a likely explanation for scarcity effects (Wright, Greenberg, & Brehm, 2004). In other words, scarce products are perceived to be unique by consumers. Based on the above, the following hypothesis is suggested:

H1b: Perceived scarcity is positively related to perceived uniqueness.

Relationship between Assumed Expensiveness and Perceived Quality

Assumed expensiveness is the price perception of the customer, and not the real price (Zeithaml, 1982). Therefore, customers have a price belief (Erickson & Johansson, 1985). From theories and studies in consumer behavior research, we know that the price is used by customers as an indicator for product quality (Rao & Monroe, 1989), especially when they are unable or not motivated to process product attribute information (Chien-Huang, Pei-Hsun, Shih-Chieh, & Kao, 2007; Suri & Monroe, 2003). A good look of a price belief can positively influence the quality of the product (Siems, Mitter, & Kraus, 2008). Furthermore, the effects of scarcity support for the prestige pricing of products (Lynn, 1991). An underlying assumption is that when high prices are used along with a compliance tactic, consumers will make their decisions based on a heuristic like using price as an indicator of quality. In practice, high prices of products may even make them more desirable (Groth & McDaniel, 1993) because people perceive higher prices as evidence of greater quality (Rao & Monroe, 1989). This positive price-quality relationship can be based on expected market forces that products with high quality often cost more to produce than products with low-quality. This relationship can also be related to competitive pressures that firms have to charge relatively low prices for low-quality products (Curry & Riesz, 1988; Erickson & Johansson, 1985).

Attributes that signal quality have been classified into intrinsic and extrinsic cues. Intrinsic cues involve the physical composition of the product such as color, flavor and texture. Extrinsic cues are product-related but not part of the physical product itself such as price, brand name and level of advertising (Teas & Agarwal, 2000). Considerable theoretical and empirical evidence also support for this extrinsic cue effect of price (Dodds, Monroe, & Grewal, 1991; Zeithaml, 1988). Besides, the price-perceived quality model proposed by Monroe and Krishnan (1985) and Lynn’s S-E-D model (1992b) support for this positive linkage between assumed expensiveness and perceived quality. Therefore, higher levels of prices provide higher quality perceptions. Based on the above, the following hypothesis is suggested:

H2a: Assumed expensiveness is positively related to perceived quality.

Relationship between Assumed Expensiveness and Perceived Sacrifice

According to Zeithaml (1988), price is usually used to measure what consumers need to sacrifice. When consumers are well informed and sufficiently motivated, price serves as an indicator of sacrifice (Chien-Huang, et al., 2007; Suri & Monroe, 2003).

Scarcity implies that obtaining a product is costly and such perceived costs to attain a scarce product represent barriers to possession; those barriers to the possession of a goal object are physiologically arousing and thereby increase desire for the unavailable commodity (Wright, 1992). Therefore, in order to satisfy their desire for the scarce object, consumers are willing to sacrifice more. Furthermore, the price-perceived quality model addresses the influence of price perceptions on consumers' perceptions of monetary sacrifice (Monroe & Krishnan, 1985). In other words, higher levels of prices will lead to greater monetary sacrifice. The same assertion is also supported by Couchen and San-san (2006). Based on the above, the following hypothesis is suggested:

H2b: Assumed expensiveness is positively related to perceived sacrifice.

Relationship between Perceived Quality and Perceived Sacrifice

Perceived quality is the consumer's judgment about a product's overall excellence, that is, the product evaluation at the point of purchase. Sacrifice components include not only monetary costs like prices, but also non-monetary costs which are all about effort, risks and insecurities connected to purchasing and using a product (Zeithaml, 1988). In the process of buying decisions, consumers judge the quality of product based on the extrinsic and intrinsic cue, and then they measure the sacrifice according to the costs they have paid (Sweeney, Soutar, & Johnson, 1999). That is, perceived quality is ahead of perceived sacrifice so when consumers have the higher perception of quality, perceived sacrifice is lower. Besides, one of the elements of perceived non-money sacrifice is risk, which can be viewed as a cost that consumers have to sacrifice to obtain a product (Wood & Scheer, 1996). Later studies adopt this view to investigate the relationship between perceived sacrifice and perceived risk (Snoj, Korda, & Mumel, 2004; Sweeney, et al., 1999). Snoj, et al., (2004) develop a model and use a mobile phone as an example to examine the relationships among perceived value, perceived quality and perceived risks. The findings show that perceived quality of a mobile phone has a negative impact on perceived risk. Sweeney, et al., (1999) also arrives with similar results, although the connection between perceived quality and perceived risk is a little weaker. Therefore, a negative relationship between perceived quality and perceived sacrifice is predicted since risk is a component of perceived sacrifice. Based on the above, the following hypothesis is suggested:

H3: Perceived quality is negatively related to perceived sacrifice.

Relationship between Perceived Uniqueness and Perceived Sacrifice

Groth and McDaniel (1993) assert that exclusive or unique perception of a product is related to its cost. They state that the exclusivity of a product is the positioning so that it can command a relatively higher price than other similar products. The same assertion is also supported by Amaldoss and Jain (2005) which discusses that in a duopoly, the desire for uniqueness leads to higher prices. The results show that as the price of a product falls, it attracts more buyers and thereby makes the product less attractive to snobs. Therefore, increased uniqueness should lead to higher prices, resulting in more costs. Based on the above, the following hypothesis is suggested:

H4: Perceived uniqueness is positively related to perceived sacrifice.

Relationship between Perceived Quality, Perceived Sacrifice and Perceived Value

Price can serve as an indicator of quality as well as a sacrifice that consumers need to give up or pay for obtaining a product. Value is described as a trade-off between overall benefits gained and sacrifices made by the customer (Lapierre, 2000; Teas & Agarwal, 2000; Zeithaml, 1988). Given the dual role of price, consumers need to judge both the price-quality relationship and the price-sacrifice relationship when they evaluate a product's value. Therefore, the more that consumers place importance on the positive role of price as a heuristic cue for quality, the less that consumers will place importance on the negative role of price as indicator of sacrifice. In other words, as price increases, consumers' perceptions of value decrease while as product quality increases, their perceptions of value increase. The positive impact between perceived quality and perceived value is confirmed in the research with small household appliance and calculators (Sweeney, et al., 1999; Teas & Agarwal, 2000). The price-perceived quality model involves a cognitive trade-off between perceived quality and perceived sacrifice that leads to a positive linkage between perceived quality and perceived value and a negative linkage between perceived sacrifice and perceived value (Monroe & Krishnan, 1985). Furthermore, Dodd, et al., (1991) and Olaru, et al., (2008) also support for the same assertion. In addition, psychic costs like performance risk and financial risk are included in non-monetary costs which consumers need to sacrifice to acquire a product (Wood & Scheer, 1996). Research observes that such psychic costs have a negative effect on perceived value (Olaru, Purchase, & Peterson, 2008; Teas & Agarwal, 2000; Wood & Scheer, 1996). That is, the higher the costs are, the lower the perceptions of value. Based on the above, the following hypothesis is suggested:

H5a: Perceived quality is positively related to perceived value.

H5b: Perceived sacrifice is negatively related to perceived value.

Relationship between Perceived Uniqueness and Perceived Value

Prior studies have found that perceived scarcity should augment the desirability of objects (Jung & Kellaris, 2004; Lynn, 1991) because the heuristic of scarcity is good and is applied to establish one's uniqueness based on need for uniqueness theory (Snyder & Fromkin, 1980). Lynn (1991) supports this effect which is employed by marketers to develop advertising messages for appealing to consumers' desire to be unique (Lynn & Harris, 1997a; Snyder, 1992). When consumers buy a product to satisfy their needs for uniqueness, the value of the product will also increase as the perceived uniqueness increases. In other words, consumers may value a product less when more people possess it. There is evidence of such behavior even in the case of products such as cookies (Worchel, Lee, & Adewole, 1975). Besides, perceived uniqueness of a product designed with a mass customization toolkit enhances its value for the customer (Franke & Schreier, 2008). Based on the above, the following hypothesis is suggested:

H5c: Perceived uniqueness is positively related to perceived value.

Relationship between Perceived Value and Purchase Intention

Past research has suggested that purchase intention or willingness to buy is a key of value perception (Dodds, et al., 1991; Grewal, Krishnan, Baker, & Borin, 1998; Szybillo & Jacoby, 1974; Zeithaml, 1988). The findings in recent research confirm that the perceived value of online music is a significant factor in predicting the purchase intention of buying online music in Taiwan (Chu & Lu, 2007). Consumers may purchase a product when they perceive the product offering the good value. The perception of high value may lead consumers to have positive feelings upon the product and thus encourage them to buy (Kumar, et al., 2009). Monroe and Krishnan (1985) imply a positive relationship between consumers' perceptions of value and purchase intention. Dodds, et al., (1991) provide sufficient evidence for the positive relationship of perceived value on willingness to buy. Later research also supports for the same point of view (Eisend, 2008). Hence, perceived value will influence the participant's purchase intention. Based on the above, the following hypothesis is suggested:

H6: Perceived value is positively related to purchase intention.

RESEARCH DESIGN AND METHODOLOGY

The Conceptual Model and Construct Measurements

A review of the literature shows that (1) scarcity may increase a product's perceived value through mediating variables-assumed expensiveness, perceived uniqueness, perceived quality, perceived sacrifice, (2) the impacts of perceived quality and perceived sacrifice on perceived value, and (4) an increase in perceived value could have further positive effect on purchase intention. Accordingly, this study proposes the research framework depicted in Figure 1, which is based on Lynn's (1992b) S-E-D model, uniqueness theory (Snyder & Fromkin, 1980) and the price-perceived quality model (Monroe & Krishnan, 1985). The major constructs and hypotheses are shown in the research framework.

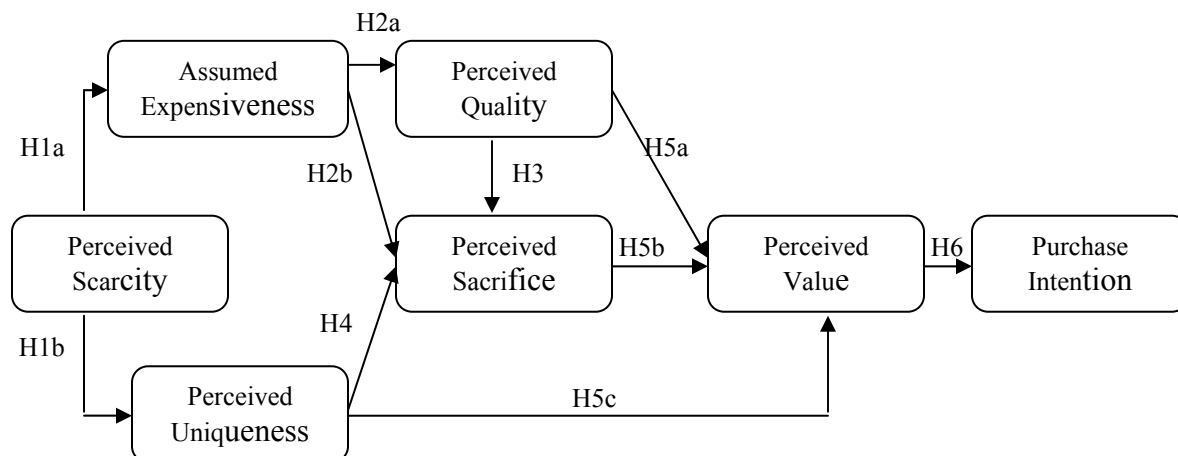


Figure 1: The research framework and hypotheses of this study

For Perceived Scarcity, perceived scarcity is defined as the perceptions of scarce commodities which resulting from quantity limit that products are provided in a limited supply. According to prior research (Lynn & Bogert, 1996; Swami & Khairnar, 2003), this study developed five questions to measure the perceptions of the supply volume and the availability of the product. *For Assumed Expensiveness*, in Lynn's S-E-D model (1992b), assumed expensiveness is defined as an intuitive notion of the high price of a product. To examine the impact of assumed expensiveness on value, this study adopted four measurement items from Couchen and San-san (2006) and measure individuals' subjective perception of expected high price. Thus, respondents were asked to state what they expect the price of the product to be. Then they were asked to compare their expected price with three reference prices: the price of products in general, the price of a similar-level product, the price of a similar-function product. *For Perceived Quality*, perceived quality is defined as the consumer's overall judgment about scarce products. Based on Dodds, et al., (1991), this study intended to use five questions to examine the degree of quality perception. *For Perceived Sacrifice*, this study defines perceived sacrifice as a combination of monetary prices and all other costs of product acquisition. According to the results of previous studies, seven items which refer to the perceived sacrifice were adapted from the discussion of previous research (Sweeney, et al., 1999; Tam, 2004; Teas & Agarwal, 2000). *For Perceived Uniqueness*, in this study, perceived uniqueness is the extent to which consumers view the product as different from other products. Based on the relevant literature (Lynn & Harris, 1997a; Snyder, 1992; Tian, et al., 2001), Franke and Schreier (2008) develop a new scale to measure perceived uniqueness. This study adopted two items to measure the construct of perceived uniqueness. *For Perceived Value*, perceived value is defined as the tradeoff between perceived quality and perceived sacrifice. This study adopted Dodds, et al., (1991) and designed four items to measure the construct of perceived value. *For Purchase Intention*, this study defines purchase intention as the degree to which consumers intend to buy scarce products. The four measurement items were adapted from prior research which provides the basis for the measurement items (Dodds, et al., 1991; Mackenzie, Lutz, & Belch, 1986).

For all the above questionnaire items, respondents are asked to indicate their level of agreement toward each statement using a seven-point Likert scale that 1 represents this item is strongly disagree, and 7 represents this item is strongly agree. The questionnaire items related to the characteristics of respondents are also included at the last section of the entire questionnaire: (1) Gender; (2) Age; (3) Education; (4) Occupation; (5) Monthly Income.

Pretests

A total of three pretests were conducted before developing the final questionnaire. The purpose of pretest 1 was to identify an object suitable for the main study. A sample of 39 students were employed to pretest a list of 6 products- a pair of shoes, a bag, a cell phone, a digital camera, a watch and a figure (e.g., your favorite star). We examined the respondents' responses for level of interests, level of products' attraction and specialness. The pretest 1 results indicated the bag as a suitable object for testing. As for a brand name of the bag, we want to avoid brand effect so the purpose of the pretest 2 was to test if there is any influence of a famous brand name and a fictional brand name on scarcity effects. We selected Gucci as a famous brand name and UC as a fictional brand name. A sample of 30 students participated in the test. The pretest 2 results showed that scarcity effects have no difference between a famous brand name and a fictional brand name. Furthermore, brand effect is not discussed in this study, so we decided to present our test object with a fictional brand name. The pretest 3 was used to test the reliability and validity of the measurements of this study. A sample of 30 students participated in the test. The results showed that there is no deleted item in this section except for perceived sacrifice. We deleted one item of perceived sacrifice in the final questionnaire.

Stimulus and Manipulations

Printed scenarios were used to manipulate scarcity. Respondents were instructed to imagine that they want to buy the product and are shopping for it in a store with enough money. Then respondents were asked to read the presented information about style, characteristics, material used, production process and functions for the demonstrated product. An appeal text was designed and used to manipulate the limited edition (scarcity). The sentence was supplemented in the scarcity condition with the phrase "Because it is a limited edition, supplies are only limited in 20," while in the non-scarcity conditions as a control, the sentence will be "Presently there are abundantly available and sufficient items in stocks".

For the manipulation check of this study, after seeing the printed scenario, each respondent was asked the following three questions: (1) I think the availability of this bag is limited, (2) This bag is a limited-edition product (Eisend, 2008), and (3) This bag is a scarce product. All items will be measured using a seven-point Likert scale.

Questionnaire Design and Sampling Plan

Based on the above discussion, two types of survey questionnaires (A: non-scarcity; B: scarcity) were developed to collect data for manipulation check as well as various research variables including perceived scarcity (5 items), assumed expensiveness (4 items), perceived quality (5 items), perceived sacrifice (6 items), perceived uniqueness (2 items), perceived value (4 items) and purchase intention (4 items). A preliminary version of the questionnaire was designed by the author. Questionnaire items were revised based on the results of the pretest before putting into the final form. The detailed contents of the questionnaire including the statement of the questionnaire items and measurement scale are shown in Appendix. The questionnaire of this study was conducted in Taiwan via online survey. Respondents were randomly assigned to fill in the questionnaire.

Descriptive Analysis

Preliminary analyses are conducted in this section to provide information about characteristics of respondents and results of relevant research variables. The data were gathered through Internet questionnaire survey over a month period from the middle of March, 2009, to the middle of April, 2009, including three pilot tests and one final survey. A total of 339 survey questionnaires were collected. There were 54 ineffective or missing data among the 339 questionnaires. We deleted 54 invalid questionnaires. Therefore, 285 questionnaires were usable. The characteristics of respondents indicate that 54% of the respondents are female; 60.7% of the respondents are between 21 and 25 years old; 59.3% of the respondents are graduate school students; 78.2% of the respondents are students; 65.6% of the respondents' incomes are less than 10,000 NT.

Manipulation Check

The t-test shows significant effects for perceived scarcity ($t=14.425$, 14.732 and 14.036 , respectively; $P=0.000$). The mean scores for perceived scarcity are 4.152, 4.051 and 4.029, respectively, for the abundant group ($n=138$); the mean scores for perceived scarcity are 6.272, 6.251 and 6.170, respectively, for the limit supply group ($n=147$). The results indicate that the manipulation is made successfully.

Factor Analysis and Reliability Tests

Exploratory factor analysis (principal component analysis) and confirmatory factor analysis were applied to assess the dimensionality, validity, and reliability of the constructs of the proposed model (Hair, Black, Babin, Anderson, & Tatham, 2006). Table 1 demonstrates that the factor loading of each item and Cronbach's α for all constructs are greater than critical levels, and thus, the dimensionality and reliability of all constructs are acceptable (Hair, et al., 2006). In terms of confirmatory factor analysis, the chi-square is 402.475 with 223 degrees of freedom. The goodness of fit (GFI) and the adjusted goodness of fit (AGFI) reach 0.898 and 0.863, respectively. In addition, the root mean square residual (RMR) is 0.097 and the root mean square error of approximation (RMSEA) is 0.053, indicating a good fit. To correct the absolute fit measures for the bias against large samples and increased model complexity, the incremental fit indices are also reported. The comparative fit index (CFI) is 0.968 and the normed fit index (NFI) is 0.932. Overall, these fit indices reveal that the measurement model is reasonably consistent with the data. As to validity and reliability, Table 1 displays standardized loading estimates for each item exceeded 0.7. In addition, the standardized loading estimated for each item exceeds 0.7, the variance explained by each latent factor is higher than 60% and the reliability values are all higher than 0.7. Accordingly, the results indicate that the convergent validity and reliability for each factor are adequate.

Factor	Number of Items	Factor Loading	Item-to-total	Cronbach's α	Number of CFA Items	Factor Loading of CFA	Reliability of CFA
Perceived Scarcity	5	0.739-0.889	0.601-0.818	0.884	5	0.850-0.884	0.914
Assumed Expensiveness	4	0.814-0.913	0.684-0.823	0.884	4	0.700-0.906	0.890
Perceived Sacrifice	3	0.837-0.929	0.742-0.855	0.901	3	0.783-0.925	0.909
Monetary Sacrifice	3	0.831-0.836	0.608-0.705	0.818	0		
Non-monetary Sacrifice	3	0.831-0.836	0.608-0.705	0.818	0		
Perceived Quality	5	0.851-0.928	0.773-0.883	0.938	4	0.796-0.944	0.916

Perceived Uniqueness	2	0.945-0.945	0.785-0.785	0.878	2	0.882-0.896	0.883
Perceived Value	4	0.888-0.937	0.804-0.883	0.933	4	0.835-0.927	0.816
Purchase Intention	4	0.934-0.966	0.882-0.939	0.962	2	0.829-0.988	0.907

Table 1: Factor analysis, reliability tests and confirmatory factor analysis

RESEARCH RESULTS AND DISCUSSIONS

The Influence of Perceived Scarcity on Purchase Intention

The objective of this study is to find out the relationships among perceived scarcity, assumed expensiveness, perceived uniqueness, perceived quality, perceived sacrifice, perceived value and purchase intention. The structure equation model was adopted to identify the interrelationships of all variables in the entire model. The proposed structural equation model is shown in Figure 2. The chi-square value of 388.306 with 230 degree of freedom is statistically significant at the 0.000 significant level. Concerning the fitness of the model, the ratio of chi-square to degree of freedom is 1.688; GFI and AGFI are 0.900 and 0.869, respectively. Besides, CFI is 0.972; NFI is 0.934; RMR and RMSEA are 0.108 and 0.049, respectively. Therefore, it is proper to conclude that the hypothesized model acceptably fits the data (Jöreskog & Sörbom, 1993).

In terms of hypothesized relationships, Figure 2 demonstrates that the relationship between perceived scarcity and assumed expensiveness ($\beta=0.574$, $P=0.000$). This is consistent with H1a that perceived scarcity is positively related to assumed expensiveness. H1b states that perceived scarcity positively influences perceived uniqueness. Figure 4-2 confirms this positive relationship ($\beta=0.630$, $P=0.000$). Furthermore, H2a predicts the relationship between assumed expensiveness and perceived quality. The results confirm that assumed expensiveness is positively related to perceived quality ($\beta=0.623$, $P=0.000$). As H2b predicts, there is a positive relationship between assumed expensiveness and perceived sacrifice ($\beta=0.834$, $P=0.000$). However, the results reveal that the relationship between perceived quality and perceived sacrifice is insignificant ($\beta=-0.106$, $P=0.115$). Hence, H3 is partially supported. Figure 4-2 presents that the relationship between perceived uniqueness and perceived sacrifice is insignificant ($\beta=-0.108$, $P=0.080$). It fails to support H4. Structure equation model shows the regression results between multi-independent variables and multi-dependent variables. Consequently, it shows the total regression effects of the full mode. When the full model is considered, there is no significantly positive relationship between perceived uniqueness and perceived sacrifice.

Figure 2 presents that the relationship between perceived quality and perceived value is significant ($\beta=0.256$, $P=0.000$). This is consistent with H5a. The relationship between perceived sacrifice and perceived value is significant ($\beta=0.781$, $P=0.000$). This is consistent with H5b. In addition, H5c predicts that perceived uniqueness influences perceived value. Figure 4-2 confirms that there is a significantly positive relationship between perceived uniqueness and perceived value ($\beta=0.461$, $P=0.000$). Therefore, H5c is supported. Besides, as H6 predicts, the relationship between perceived value and purchase intention is significant ($\beta=0.922$, $P=0.000$). The results also confirm the positive influence of perceived value on purchase intention. Based on the above results, the model adopted by this study is confirmed.

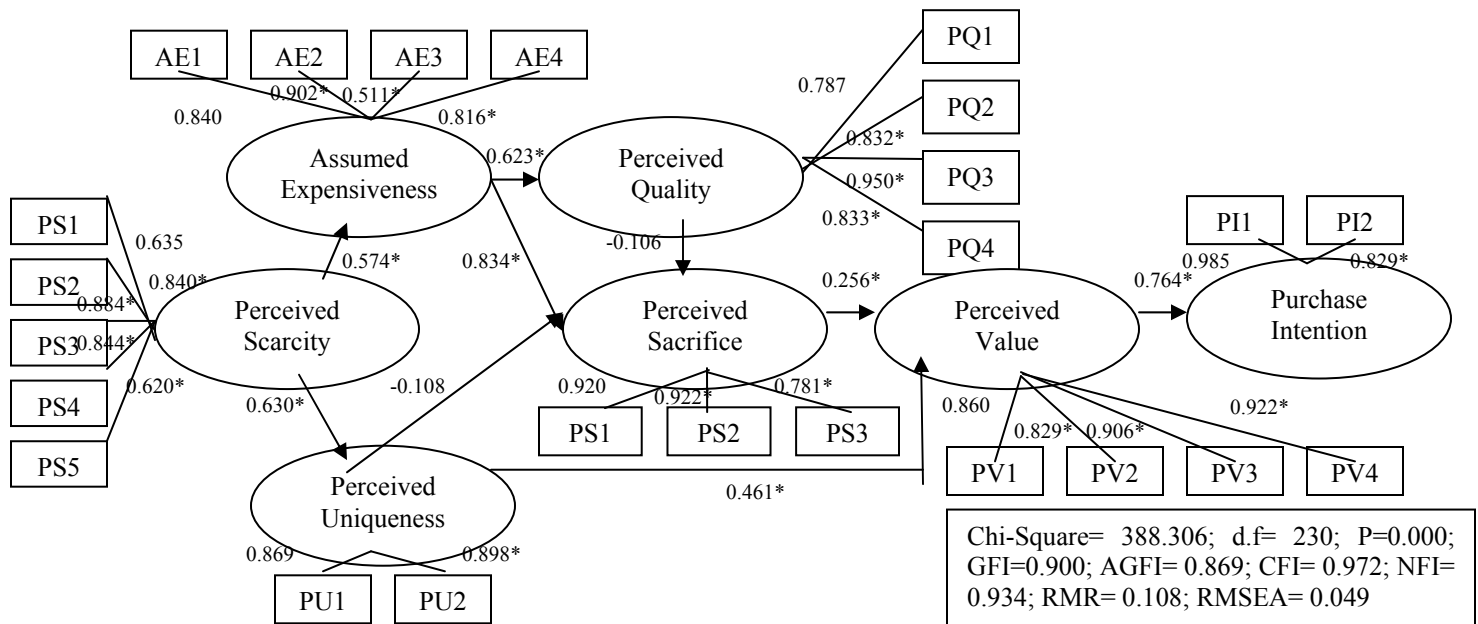


Figure 2: Structure equation model of the study

The Competing Models

This study proposes the research framework which integrates Lynn’s (1992b) S-E-D model, Monroe and Krishnan’s (1985) price-perceived quality model, and Snyder and Fromkin’s (1980) need for uniqueness theory. One of research objectives is to examine the relative importance of assumed expensiveness and perceived uniqueness on scarcity effects. Thus, we divide the research model into two parts: model 1 represents the influences of perceived scarcity on purchase intention based on the S-E-D model and the price-perceived quality model; model 2 represents the influences of perceived scarcity on purchase intention based on need for uniqueness theory. These two proposed models are shown in Figure 3 and Figure 4, respectively.

The overall fit of the model shown in Figure 3 is used to ensure that the model should be evaluated. The chi-square value of 282.988 with 189 degree of freedom is statistically significant at the 0.000 significant level. Concerning the fitness of the model, the ratio of chi-square to degree of freedom is 1.497; GFI and AGFI are 0.918 and 0.890, respectively. Besides, CFI is 0.982; NFI is 0.947; RMR and RMSEA are 0.143 and 0.042, respectively. Therefore, it is proper to conclude that the competing model 1 acceptably fits the data (Jöreskog & Sörbom, 1993).

In terms of the model shown in Figure 4, the chi-square value of 181.925 with 94 degree of freedom is statistically significant at the 0.000 significant level. Concerning the fitness of the model, the ratio of chi-square to degree of freedom is 1.935; GFI and AGFI are 0.927 and 0.894, respectively. Besides, CFI is 0.976; NFI is 0.951; RMR and RMSEA are 0.121 and 0.57, respectively. According to Joreskog and Sorbom (1993), we can conclude that the competing model 2 fits the data.

As for hypothesized relationships, Figure 3 and Figure 4 demonstrate that all relationships are significant, confirming the scarcity effects on desirability proposed by the Lynn’s (1992b) S-E-D model as well as proving that consumers buy scarce commodities to satisfy their uniqueness motivations. Besides, the results indicate the relative importance of assumed expensiveness and perceived uniqueness on the value perception process. The effects of scarcity on purchase intention through perceived uniqueness, perceived sacrifice and perceived value are stronger than the scarcity effects through assumed expensiveness, perceived quality, perceived sacrifice and perceived value. Thus, this study further compares the extent to which mediating mechanisms play a role in influencing consumers’ purchase intents.

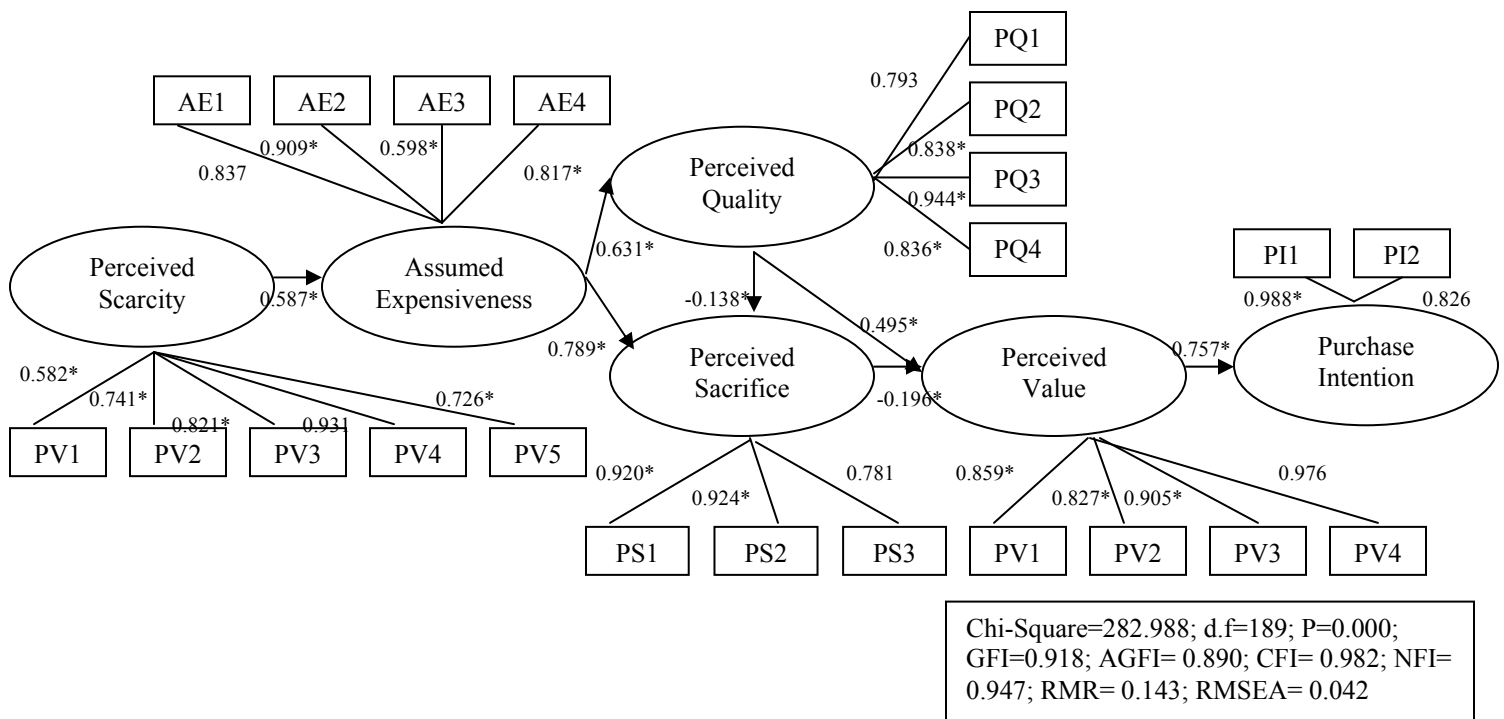


Figure 3: The competing model 1 of the study

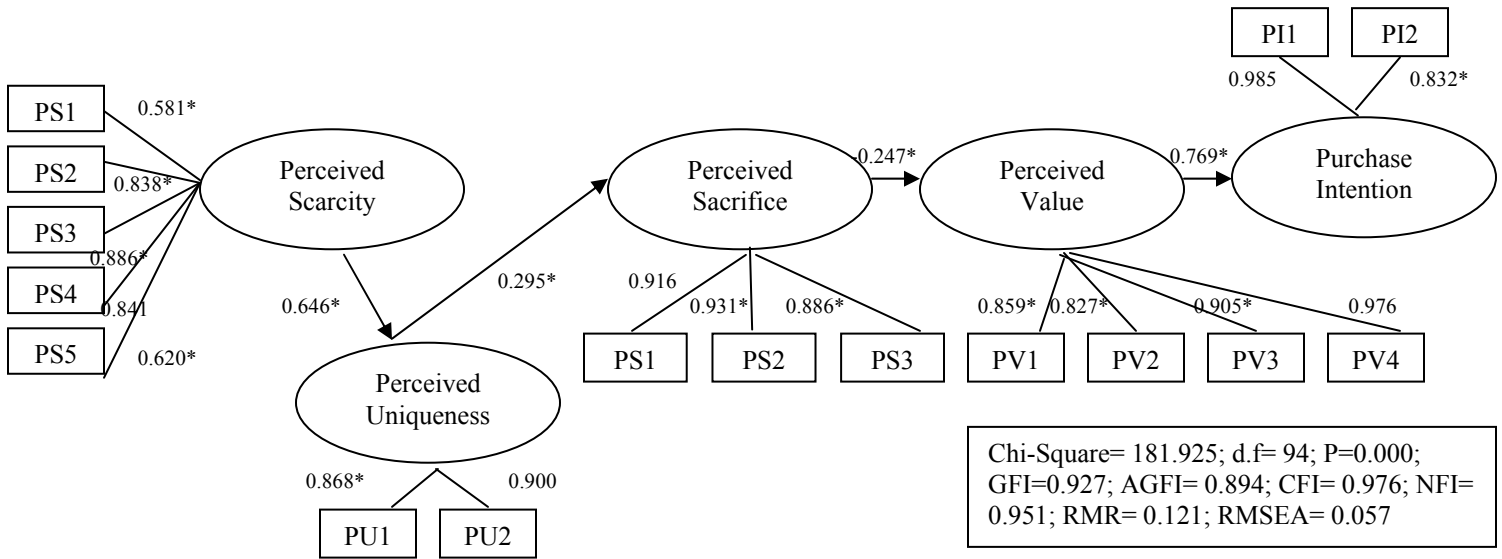


Figure 4: The competing model 2 of the study

In summary, the model fit statistics of the full model, the competing model 1 and the competing model 2 are shown in Table 2. The results indicate that the competing model 2, which is based on need for uniqueness theory, has the best model fit (Chi-Square= 181.925; GFI= 0.927; AGFI= 0.894; RMR=0.121), while the competing model 1, based on the S-E-D model and the price-perceived quality model, has a better model fit (Chi-Square= 282.988; GFI= 0.918; AGFI= 0.890; RMR=0.143) than the full model (Chi-Square=388.306; GFI= 0.900; AGFI= 0.869; RMR=0.108). This may be because the full model integrates the competing model 1 and the competing model 2 to examine the importance of multiple mediating variables on the value perception process of scarcity appeal. Since perceived scarcity affects perceived value and purchase intention through different mechanisms, the model fit as well as estimated coefficients and C.R values for each path of the full model is not as good as two competing models. Thus, we further confirm scarcity effects on value perception proposed by Lynn (1992b) and Snyder and Fromkin's (1985) need for uniqueness theory.

Paths	The Full Model		The Competing Model 1		The Competing Model 2	
	Standardized Coefficients	C.R.	Standardized Coefficients	C.R.	Standardized Coefficients	C.R.
Perceived Scarcity→Assumed Expensiveness	0.574*	9.614	0.587*	9.579		
Assumed Expensiveness→Perceived Quality	0.623*	9.627	0.631*	9.773		
Perceived Scarcity→Perceived Uniqueness	0.630*	10.380			0.646*	10.414
Assumed Expensiveness→Perceived Sacrifice	0.834*	10.456	0.789*	9.539		
Perceived Uniqueness→Perceived Sacrifice	-0.108	-1.750			0.295*	4.603
Perceived Quality→Perceived Sacrifice	-0.106	-1.576	-0.138	-2.035		
Perceived Quality→Perceived Value	0.246*	3.400	0.495*	7.773		
Perceived Sacrifice→Perceived Value	-0.256	-4.211	-0.196	-3.282	-0.247	-4.334
Perceived Uniqueness→Perceived Value	0.461*	4.036			0.623*	9.979
Perceived Value→Purchase Intention	0.764*	15.385	0.757*	12.446	0.769*	17.014
Fit index						
Chi-Square(P-Value)	388.306 (P= 0.000)		282.988 (P=0.000)		181.925 (P=0.000)	
Degree of freedom	230		189		94	
GFI	0.900		0.918		0.927	
AGFI	0.869		0.890		0.894	
RMR	0.108		0.143		0.121	

Note: *.C.R. (critical ratio)>1.96; using a significant level of 0.05, critical ratios that exceed 1.96 would be considered significant.

Table 2: The model fit statistics of the full model, the competing model 1 and the competing model 2

CONCLUSIONS AND SUGGESTIONS

Research Conclusions

This study evaluates three major research questions. First, this study examines the influences of scarcity effects on value perception and purchase intention through mediating mechanisms- assumed expensiveness, perceived quality, perceived sacrifice and perceived uniqueness. Second, this study identifies the interrelationships among perceived sacrifice, perceived quality and perceived uniqueness. Third, we further compare the relative importance of assumed expensiveness and perceived uniqueness on scarcity effects. Based on the results of this study, several conclusions can be drawn as follows. First, perceived scarcity has a significantly positive impact on assumed expensiveness. The results are consistent with Koford and Tschogl (1998) and Couchen and San-san (2006) who conclude that perceived scarcity influences assumed expensiveness and thus impacts desirability. Since the research framework of this study is developed based on Lynn's (1992b) S-E-D model, which hypothesizes that people associate perceived scarcity with assumed expensiveness based on a naïve economic theory, the results also support for Lynn's (1992b) findings. The higher the level of perceived scarcity, the higher will be the assumed expensiveness. Second, perceived scarcity has a significantly positive effect on perceived uniqueness. The results are consistent with Amaldoss and Jain (2005) and Tian, et al., (2001). These studies suggest that by possessing scarce commodities, people can satisfy their pursuit of distinctness because scarce commodities are perceived to be unique. In addition, the results are also consistent with Snyder (1992), which proposes the underlying engine that drives the catch-22 carousel is specialness that scarce possessions impart to the self. The results of this study indicate that the higher the level of perceived scarcity, the higher will be the perceptions of uniqueness.

Third, a significantly positive relationship characterizes the influence of assumed expensiveness on perceived quality. The findings are consistent with Dodds, et al., (1991), Lynn (1991), Rao and Monroe (1989), Siems, et al., (2008), and Zeithaml (1988). These studies propose that people see price as one of extrinsic cues to signal quality. Moreover, Monroe and Krishnan's price-perceived quality model (1985) and Lynn's S-E-D model (1992b) also assert for the positive linkage between assumed expensiveness and perceived quality. Furthermore, assumed expensiveness has a significantly positive effect on perceived sacrifice. The results are consistent with Conchen and San-san (2006), Monroe and Krishnan (1985), and Zeithaml (1988), which suggest that assumed expensiveness will result in higher level of perceived sacrifice. In the study of Zeithaml (1988), the role of price not only acts as an indicator of quality but also an indicator of sacrifice. Price is used to measure what consumers need to sacrifice (Chien-Huang, et al., 2007). A scarce product implies that obtaining it is costly so consumers need to sacrifice more to satisfy their desire for the scarce object.

In addition, the influence of perceived quality on perceived sacrifice is insignificant in the full model. The results partially support H3 and in line with the study of Sweeney, et al., (1999), who suggest that perceived quality has a negative impact on perceived sacrifice, although the connection is a little weaker. Thus, further discussion is required to confirm the relationship between perceived quality and perceived sacrifice. Fourth, the relationship between perceived uniqueness and perceived sacrifice is insignificant in the full model. The findings are not consistent with Amaldoss and Jain (2005) and Groth and McDaniel (1993). These studies propose that uniqueness perception of a product is associated with its cost and such exclusivity of a product can command a relatively higher price. However, the results of the competing model 2 indicate that a significantly positive relationship characterizes the influence of perceived uniqueness on perceived sacrifice, proving that increased uniqueness will result in higher prices and consumers are willing to pay more to express their uniqueness.

Fifth, perceived quality has a significantly positive effect on perceived value. The results are consistent with Olaru, et al., (2008), Sweeney, et al., (1999) and Teas and Agarwal (2000) who propose that there is a positive relationship between perceived quality and perceived value. The relationship between perceived sacrifice and perceived value is significantly negative. The results support H5b and are in line with Monroe and Krishnan (1985), Olaru, et al., (2008) and Teas and Agarwal (2000). These studies suggest that there is a cognitive trade-off between perceived quality and perceived sacrifice that leads to a positive linkage between perceived quality and perceived value and a negative linkage between perceived sacrifice and perceived value. In addition, perceived uniqueness has a significantly positive impact on perceived value. The results are consistent with Franke and Schreier (2008), Lynn (1991), Lynn and Harris (1997b) and Snyder (1992). These studies suggested that when consumers buy scarce products to satisfy their needs for uniqueness, the value increases as the uniqueness perceptions of the products increase. Furthermore, this study also confirms that the influence of perceived scarcity on purchase intention through perceived uniqueness, perceived sacrifice and perceived value has a stronger effect than the influence through assumed expensiveness, perceived quality, perceived sacrifice and perceived value.

Finally, perceived value has a significantly positive effect on purchase intention. The results are consistent with Dodd, et al., (1991), Eisend (2008), Kumar (2009), and Monroe (2001). These studies suggest that purchase intention is a key of value perception and a positive relationship between consumers' perceptions of value and purchase intention exists.

Managerial Implications

According to the empirical research results and conclusions, there are some managerial implications that this study would like to suggest. First, consumers are associated scarce products with higher prices and they acquire scarce products for the purpose of differentiating from others. Perceived scarcity is proved to influence assumed expensiveness and perceived uniqueness. Second, price serves as a heuristic cue of quality and an indicator of sacrifice. When marketers use scarcity strategies in an attempt to influence consumer's decision-making, they should notice the balance between the price and the quality of a product because assumed expensiveness is confirmed to have significant influence on perceived quality and perceived sacrifice.

Third, based on Monroe and Krishnan's (1985) price-perceived quality model, the results indicate that perceived quality has a significantly positive impact on a consumer's perception of value for a product, while perceived sacrifice has a significantly negative impact on the consumer's perception value for a product. The application of price-perceived quality model to scarcity effects is confirmed. Besides, based on need for uniqueness theory by Snyder and Fromkin (1980), people want to be different from others so they have desire for obtaining scarce products that can communicate uniqueness. According to the results of this study, perceived uniqueness significantly influences perceived value, and thereby influences purchase intention. This can be employed by marketers, suggesting that tactics aimed at inducing scarcity effects will be effective when consumers see scarce commodities as attractive options to express specialness.

This study attempts to integrate these relevant constructs into a more comprehensive research model. Thus, the research model as proposed in this study serves as a useful reference for further academic evaluation and practical justification. Specifically, this study compares the extent to which mediating variables are important on the value perception process. It is suggested that marketers deliver scarcity messages by stressing the relative importance of mediating mechanisms. For example, when marketers employ scarcity strategies, they can show the scarce product's uniqueness rather than a high price as an indicator of quality to motivate consumers to buy the product.

Limitations and Future Research Directions

Although these research results are compelling, several limitations deserve comment. These limitations suggest areas and directions for further research. First, data were mostly collected from students and the ages of respondents were young. The generalization of the study results might be limited. Future research could try to increase the external validity by collecting data from various demographics. Further, the respondents of this study are limited to Taiwanese, so the results of this study may not extend scarcity effects to people from other countries. Further validation from different countries could be very helpful for validating the applicability of the research model as developed in this study.

Second, due to the fact that our results are directly relevant only to one specific product (the bag), generalizations of the findings beyond the object tested should be taken with caution. Another avenue for future research is that a replication of this study with other products would help to demonstrate the generalization of the results. Third, the test object was presented with a fictional brand name and brand effect was not considered in this study. Thus we suggest future research include brand effect to investigate if there is a stronger effect of scarcity.

Forth, the research model of this study integrates Lynn's S-E-D model (1992b), Monroe and Krishnan's price-perceived quality model (1985), and need for uniqueness theory by Snyder and Fromkin (1980), discussing the interrelationships of multiple mechanisms. In future, researchers should expand the model with more mechanisms on scarcity effects or relevant variables and perhaps study relationships between purchase intention, customer satisfaction and their loyalty.

Finally, scarcity tactics include two types: quantity limit and time limit. This study only focuses on quantity limit. Thus, we suggest future research include the effect of time limit. Furthermore, this study does not examine how much restricted volume is appropriate. A quantity limit is set for the restriction, and the retailer could not know exactly how to place a ceiling on sales to intensify consumers' purchase intention. Future studies can consider the level of restricted volume.

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APPENDIX: QUESTIONNAIRE ITEMS

Manipulation Check

1. I think the availability of this bag is limited
2. This bag is a limited-edition product.
3. This bag is a scarce product.

Section 1: Perceived Scarcity

1. I think that the current supply of this bag is small.
2. I think that this bag is selling out soon.
3. I think that many people will buy this bag.
4. I feel that the limited edition of this bag will cause many people to buy.
5. I think the supplies only limited in 20 will cause a lot of people to buy.

Section 2: Assumed Expensiveness

1. What is my expectation of the price of this bag? _____
2. What I would expect to pay for this bag is high.
3. Considering the expected price of this bag, the price compared to a bag in general is expensive.
4. Considering the expected price of this bag, the price compared to a similar- level bag is expensive.
5. Considering the expected price of this bag, the price compared to similar-function bag is expensive.

Section 3: Perceived Sacrifice

1. If I purchase this bag at expected price, I would not be able to purchase some other products I would like to purchase now.

2. If I purchase this bag at expected price, I would have to reduce the amount of money I spend on the other things for a while.
3. In general, the monetary sacrifice that I would be making if I purchased this bag at expected price is high.
4. The time I perceived to spend in acquiring this bag is long.
5. The uncertainty I perceived to have to acquire this bag is high.
6. In general, the non-monetary sacrifice that I would be making if I purchased this bag is high.

Section 4: Perceived Quality

1. This bag would be reliable.
2. This bag would be of high workmanship.
3. This bag would be of good quality.
4. This bag would be dependable.
5. This bag would be durable.

Section 5: Perceived Uniqueness

1. I perceive this bag as highly unique.
2. Possessing this bag makes me feel distinctive.

Section 6: Perceived Value

1. This bag is good value for money.
2. The expected price for this bag is acceptable.
3. This bag is considered to be a good buy.
4. This bag appears to be a good bargain.

Section 7: Purchase Intention

1. The likelihood of purchasing this bag is high.
2. If I were going to buy this bag, I would consider buying it at the expected price.
3. At the expected price, I would consider buying this bag.
4. The probability that I would consider buying this bag is high.

Section 8: Respondent Information

- | | |
|-------------------|--|
| 1. Gender | <input type="checkbox"/> Male <input type="checkbox"/> Female |
| 2. Age | <input type="checkbox"/> Less than 15 <input type="checkbox"/> 16-20 <input type="checkbox"/> 21-25 <input type="checkbox"/> 26-30 <input type="checkbox"/> 31-35 <input type="checkbox"/> 36-40 <input type="checkbox"/> More than 41 |
| 3. Education | <input type="checkbox"/> Less than Junior high school <input type="checkbox"/> High school <input type="checkbox"/> College/University <input type="checkbox"/> Master <input type="checkbox"/> Doctoral |
| 4. Occupation | <input type="checkbox"/> Students <input type="checkbox"/> Technology Sector <input type="checkbox"/> Manufacture Sector <input type="checkbox"/> Industrial Sector <input type="checkbox"/> Business Sector
<input type="checkbox"/> Service Sector <input type="checkbox"/> Official Sector <input type="checkbox"/> Others |
| 5. Monthly Income | <input type="checkbox"/> Less than 5,000 NT <input type="checkbox"/> 5,001-10,000 NT <input type="checkbox"/> 10,001-15,000 NT <input type="checkbox"/> 15,001-20,000 NT
<input type="checkbox"/> 20,001-25,000 NT <input type="checkbox"/> 25,001-30,000 NT <input type="checkbox"/> More than 30,000 NT |
-