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產品受歡迎資訊對消費者網路購物之影響

The Impact of Popularity Information on Consumers' Online Purchases

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人文關懷・學術倫理

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于台大資訊管理學研究所

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中文摘要

當消費者面臨購買決策時，產品的受歡迎與否，往往是一個可以幫助消費者做決策的重要指標。這種資訊在網路上尤其普及，因為它可以不受限制的即時受到更新。最常見的兩種產品受歡迎資訊為: 1) 產品市場: 反映產品在市場上的需求量。可以是個擁有大市場的大眾產品 (例如: 劇情型電影)，或者可以是個針對特定市場的小眾產品 (例如: 紀錄片)。 2) 產品銷售量: 反映產品自身的銷售數量。總括來說，大眾產品的銷售量高於小眾產品的銷售量時，這表示銷售量與市場大小所傳達的訊息是處於一致的狀況。但是當小眾產品的銷售量相同或超過大眾產品的銷售量時，這表示銷售量與市場大小所傳達的訊息是處於不一致的狀況。以往的研究指出，當小眾產品的銷售量與大眾產品的銷售量相同時，大多消費者會把這種訊息解讀為產品品質的指標，認為小眾產品的品質較好。然而，同樣的資訊也可以被解讀為潮流的指標，會吸引消費者去跟其他消費者做比較，而且覺得自己應該要得到那些消費者所擁有的東西。這種比較的過程，就是所謂的社會比較。在這種狀況下，很多人會受到小眾產品高銷售量的影響，認為這是當下的購買潮流，因而決定跟著這群小眾客群的購買決策。但是這種購買力量，並不如當消費者把資訊解讀為產品品質時來得高。所以這篇研究假設，當產品的市場大小與銷售量是不一致時 (例如: 小眾產品的銷售量大過於大眾產品時)，購買小眾產品的機率會比當產品的市場大小與銷售量是一致的狀況下來得高，而其增加的量是以用產品品質為聯想的狀況高過於以社會比較為聯想的狀況。這個實驗是以實驗法，讓 200 位受試者在網路上進行實驗。最後的實證結果強烈支持我們的假設，並且對電子商務提供了許多實質的意涵。

關鍵字：產品受歡迎資訊、社會比較、產品品質、訊號、網路購物行為

Abstract

Popularity information of products, frequently consulted by consumers for making purchase decisions, has become even more prevalant online, where such information is readily updated. Two kinds of popularity information can be identified: (1) market size, referring to a product's potential demand in the market, can be either hit (e.g. drama movie) or niche (e.g. documentary movie) (2) sales volume, which refers to the actual purchase of products. Typically, sales volume is congruent with maket size where hit products have a higher sales than niche products; however, sales volume can be incongruent with market size where niche products have equal or higher sales than hit products. Past research has suggested that a niche product with an equally high sales volume as hit products signals a higher level of product quality. However, popularity information can also signal a social trend, which may induce consumers to compare themselves with other consumers and feel entitled to own what other consumers own. This process illustrates the phenomenon of social comparison. As such, a higher sales volume of a niche product may tempt some consumers to follow the trend of a limited number of people with special preferences, but the boost of purchases in this case might not be as high as that for the consumers who interpret sales volume as product quality. Therefore, it is hypothesized that when a product's market size and sales volume are incongruent (i.e. a higher sales volume for niche products than for hit products), the probability of purchasing a niche product increases compared to the condition of congruence and that the magnitude of increase is higher for consumers with the inference of quality evaluation than with the inference of social comparison. The method of online experiment was adopted, with 200 participants, in this study. The empirical results strongly supported the proposed hypotheses and provided practical implications for e-commerce.

Keywords: popularity information, social comparison, product quality, signal, online purchase behavior

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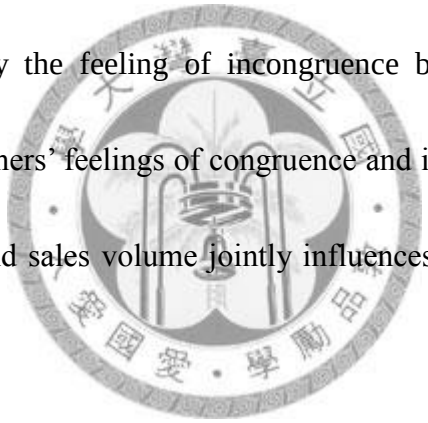
Chapter 1: Introduction

When making a purchase decision under conditions of uncertainity, consumers tend to seek signals from existing information and make interpretions of them (Cai et al., 2008; Chen, 2008; Park and Lesig, 1977). Popularity information serves as an information source for consumers to learn actions of others, which may ease consumers' uncertainites and assist in their decision making (Anderson and Holt, 1996, 1997; Celen and Kariv, 2004; Chen, 2008, 2010; Tucker and Zhang, 2007, 2010). Two types of popularity information, market size and sales volume, can be identified. A product's market size refers to a product's overall potential demand in the market. Consumers may judge a product's market size by observing whether product features match the preferences of general consumers (e.g. hit product) or a specific segment of consumers (e.g. niche product) (Tucker and Zhang, 2011). For example, a drama movie could be considered as a hit product that caters to a large market, whereas a documentary film could be considered as a niche product that caters to a small market. Based on the distinction between hit or niche, consumers could roughly grasp the product's overall demand in the market. On the other hand, sales volume provided by sellers illustrates the exact purchase volume accumulated from previous consumers. The volume can usually be obtained from a particular website or a specific event, depending on the seller's settings. A product's market size and sales volume are typically considered congruent when hit products have a higher sales volume than niche products and are considered incongruent when niche

products have a higher sales volume than hit products. These two types of information are interrelated because an accumulation of sales volume may reflect a product's market size. For instance, a consistent gain of high sales volume from different sales channels may eventually lead to the attribution of large market size. However, the signal conveyed by market size and sales volume may not always be congruent. Continuing with the previous example of drama movie and documentary film, consumers may intuitively feel it congruent to see a drama movie has a higher sales volume than a documentary film. However, there are also conditions wherein a documentary film has an equally high or even higher sales volume than a drama movie, which may exemplify the feeling of incongruence between market size and sale volume to consumers. Consumers' feelings of congruence and incongruence illustrate that the information of market size and sales volume jointly influences consumers' perception about the product.



The distinction between these two kinds of popularity information become more important in the context of e-commerce. Sellers in the physical channels are restricted by limited shelf space and thus tend to favor displaying products that cater to a large market (e.g. hit products) (Brynjolfsson, Yu, and Smith, 2010b). However, the emergence of the Internet has alleviated these restrictions by allowing e-businesses to offer wide product selections, including both hit and niche items, and displaying the most up-to-date sales volume next to every product. This shows that Internet technology has made niche products more available and has linked the information of market size and sales volume. As such, it becomes

interesting to distinguish these two types of popularity information and assess their possible different impacts on consumers' purchase decisions.

Tucker and Zhang (2011) have examined the effects of market size and sales volume together and their results revealed an interesting finding: When a hit and a niche product are equally popular with the same level of sales volume, the information of sales volume boosts sales more for a niche product than for a hit product. Since a niche product with a smaller market size is less likely to be chosen compared to a hit product, the niche product signals a higher level of product quality than the hit product with the same level of sales volume. The results of Tucker and Zhang suggested that the information of sales volume signals product quality, but the signaling effect is different for hit and niche products.

However, sales volume can also signal a social trend when a significant number of people are purchasing the same product. As such, consumers may have the desire to follow the crowd in making the same purchase. In this condition, consumers' purchase intention is triggered because they treated the high volume of customers who have previously made a purchase as a comparison target or a reference group (Khan and Khan, 2005; Schiffman and Kanuk, 2000). The strong purchase intention is caused by the perception that consumers feel entitled to own what their reference group owns and feel deprived when they fail to do so (Loewenstein, 1988; Luo, 2005; Olson et al., 1986). Such a comparison process is so-called social comparison, which is one of the most prominent social influences and is a central

feature of human social life (Buunk and Gibbons, 2007; Klein, 1997; Suls, 2000, 2002). Since the effect of social comparison is so pervasive in human behavior, it is important to explore popularity information from this perspective. Specifically, we propose to comprehensively examine how consumers may interpret market size and sales volume based on the inferences of quality evaluation and social comparison under conditions of congruence and incongruence between market size and sales volume.

This research should provide practical insights for academia and e-commerce. First, it contributes to the understanding of how popularity information influences consumers' choices of a relatively new product type, namely a niche product, on the Internet, while still offering legitimate explanations for consumers' decisions on a hit product. Second, it has considered not only product-related but also social-related mechanisms behind popularity information, which are two inferences that have seldom been discussed together in the past but could both be possibly triggered on the Internet and lead to different purchase behaviors. Third, it provides meaningful recommendations for e-commerce on how to strategically leverage market size and sales volume to influence consumers' purchase decision. These contributions should allow the explanatory power of popularity information to be more comprehensive and more generally applied to different conditions in the context of online purchases.

Chapter 2: Literature Review

Much research has shown that consumers tend to observe the decisions of others and incorporate that into their decision-making (Cai et al., 2008; Chen, 2008). This phenomenon becomes more obvious in the face of difficulty and ambiguity, such as in online shopping, where consumers are unable to physically inspect a product (Brynjolfsson and Smith, 2000; Lynch et al., 2001). The uncertainty of the online environment can increase consumers' reliance on existing information regarding a product (Pavlou, et al., 2007; Lim et al., 2006). Consumers may interpret signals hidden under the information to assist them in making a better decision. In the context of online purchases, popularity information serves as a convenient channel for potential consumers to observe and interpret what other consumers think and their actions regarding a product (Chen, 2010; Tucker and Zhang, 2007). Depending on the dominant inference in consumers' perception, they may interpret the signal in popularity information differently. Such observational process could be referred to as a kind of observational learning, described in the literature (Hongbin et al., 2009; Bikhchandani et al., 1992, 1998, 2005). Moreover, the process of interpreting the signal of popularity information could be legitimately explained by the signaling effect (Kirmani and Rao, 2000; Spencer, 2002).

2.1. Observational Learning and Signaling Effect

The process of observing popularity information could be considered as a kind of

observational learning. It is a form of learning in which people acquire new behavior by watching the behavior of others (Hongbin et al., 2009; Yoo and Kim, 2012). Bandura's (1971) social cognitive learning theory states that there are four stages involved in observational learning: motivation, attention, retention, and motor reproduction. Such concept could be applied to the context of observing popularity information on the Internet. Consumers' motivation is to understand what other consumers think or how they act about the product. They pay attention to the product's popularity and make interpretations of the signals conveyed by popularity information. Based on the interpretations they retain, they perform motor reproduction if they decide to make the same purchase.

The process of interpreting signals is one of the most critical parts in observational learning and could be best explained by the signaling effect (Kirmani and Rao, 2000; Spencer, 2002). In this condition, popularity information is like a sender conveying signals to consumers who are the receivers (Gammoh et al., 2006; Kirmani and Rao, 2000). Consumers may use different ways to interpret signals. For example, the volume of advertising of a product could be considered as a kind of popularity information. Consumers may interpret the high-volume of advertising as a signal conveying the quality of a product because companies will not waste such large expenditures on products with bad quality (Kirmani, 1990). On the other hand, consumers may also interpret the high-volume of advertising as a signal conveying an existing or a new social trend that a significant number of consumers are purchasing. Companies must have noticed the trend and therefore are willing to invest a high volume of advertisements in this product. The two examples above both show that consumers have observed the signal – high-volume of advertising – yet, consumers in the first example interpret the signal from a product-related prospective, whereas, consumers in the second example interpret the signal from a social-related prospective. This implies that the same signal may convey different meanings to consumers, depending on how consumers interpret it (Kirmani and Rao, 2000; Amatulli and Guido, 2011).

2.2. Popularity Information and Quality Inference (Quality Evaluation)

Classic research on popularity information emphasizes evidence of quality inference. Some research was conducted in labs to examine how people tend to disregard their private signals and follow the majority's decision based on the assumption that it is a better or the correct choice (Anderson & Holt, 1997; Celen and Kariv, 2004). Some research was conducted in the field to inspect how people infer the volume of others' choices as a signal of product quality (Chen, 2010; Duflo et al., 2004; Duflo, 2006). All of these studies consistently show that a high level of popularity serves as a signal of quality evaluation, which could boost the sales for hit products that are already popular and create the effect of the "famous become more famous".

Based on the same inference of quality evaluation, Tucker and Zhang (2011) proposed that two types of popularity information – market size and sales volume – should not be studied separately as they were in traditional studies on popularity information. These two factors should be examined together, as they jointly influence consumers' purchase decisions on the Internet. Their empirical results have uncovered findings different from the previous research: When a hit and a niche product have the same sales volume, consumers have a higher tendency to purchase a niche product rather than a hit product, which is different than predicted by previous studies. Since a niche product with a smaller market size is less likely

to be chosen in comparison to a hit product, consumers therefore perceive that the niche product must possess higher quality to obtain an equally high sales volume as the hit product which caters to a large market. Tucker and Zhang's (2011) research has extended the scope of popularity information to the Internet by incorporating some characteristics of online sales into their research model. However, similar to most of the previous research on popularity information, their study is solely based on the inference of quality evaluation. Their model may not be able to explain many situations wherein consumers interpret popularity information from a social prospective, which could be easily triggered by the social cues that prevasively exist on the Internet, where there are no temporal and space constraints.

2.3. Popularity Information and Social Inference (Social Comparison)

A few researchers have proposed to interpret popularity information from a social perspective. For example, Salganik, Dodds, and Watts (2006) conducted a laboratory experiment to examine how consumers' download decisions for online songs are affected by the number of downloads listed on the website. However, their study merely viewed the number of downloads as a social influence but did not discuss the underlying mechanism that drives consumers to make the social interpretation and how this social interpretation differs from the traditional interpretation based on the inference of quality evaluation. Sridhar and Srinivasan (2012) studied how other consumers' online ratings would change online

reviewers' social perceptions (e.g. conformity needs, uniqueness needs, and normative conflict) and moderate their online product rating. The kind of social inference that Sridhar and Srinivasan examined in their study is similar to the fundamental concept of social comparison that we propose for this research, although their research attention and scope are quite different from ours. Nevertheless, their research convinces us that it is legitimate to examine popularity information from a social perspective, namely social comparison. A brief literature review of social comparison is discussed in the following section.

Social comparison is defined as the process of considering information about one or more person(s) in relation to the self, evaluating and identifying similarities or differences between the self and others (Festinger, 1954). The "others" here refers to a reference group, which is "any person or group that serves as a point of comparison for an individual in forming either general or specific values, attitudes, or behavior" (Khan and Khan, 2005; Schiffman and Kanuk, 2000). The reference group could be someone known or not known, similar or dissimilar, better-off or worse-off (Brown et al., 2007; Buunk et al., 1990; Mussweiler, 2001; Mussweiler, and Strack, 2000). As proposed by Festinger (1954), people are driven to maintain a sense of normalcy and accuracy in their world. When people are uncertain about their opinions or abilities, they tend to compare themselves with others (reference groups) to evaluate their own situations under the motivation of self-evaluation (Shepherd et al., 1996). In this condition, people do not compare themselves with just anyone, but with particular others who are similar, rather than dissimilar, because people who share

similarities or common attributes/interests are perceived as the best comparative references for generating accurate evaluations (Buunk and Gibbons, 2007; Wood, 1989).

In addition to considering the motivation of self-evaluation and making comparison with similar others, the motivations and the reference group selected for comparison could be expanded to a broader range. For example, the motivation of self-enhancement leads one to compare oneself with others in order to enhance or protect subjective well-being (Kruger et al., 2008; Gibbons, 1999). In this condition, people normally seek a downward comparison by comparing themselves with dissimilar others who are worse-off or less fortunate (Wills, 1981; Buunk, 1995). On the other hand, the motivation of self-improvement leads to direct comparisons in the interest of improving oneself. People in this condition tend to compare with superior role models who can provide hope and inspiration (Taylor and Lobel, 1989; Wood, 1989).

A similar concept could also be applied to the condition of online purchases (Wu and Lee, 2008a, 2008b). Based on different motivations, consumers may select a reference group that best suits their motivations and make comparisons with their purchase decisions. Hoch & Loewenstein (1991) specifically described how consumers may perceive a strong desire to purchase the same product as their reference group and how their emotions may be altered if the purchase is made or not made. The force that drives consumers to perceive a strong desire to own what their reference group owns is so-called deprivation, which is the experience of

being deprived of something to which one believes oneself to be entitled (Loewenstein, 1988; Luo, 2005; Olson et al., 1986). When the purchased is made as expected, consumers would not feel deprived because they are indulged in the joy of owning what they perceived they are entitled to own (Iyengar et al., 2011; Wu and Lee, 2008a, 2008b). However, when the purchase is not made, the feeling of deprivation becomes apparent, which makes consumers experience strong disappointment because they realize that they have less of what they believe themselves to be entitled than their reference group (Olson et al., 1986). In this condition, only a quick purchase could quell the feeling of deprivation and bring a feeling of happiness. This explains why much research has reported that the effect of social comparison often leads to the result of impulsive purchasing, which is a spontaneous force that suddenly drives consumers to make a high volume of purchases (Luo 2005; Rook 1987; Zhang et al. 2006).

As the information of market size and sales volume reflect the purchase decision of previous consumers, it is highly possible that consumers may treat the signal conveyed from these two pieces of information as their reference group and compare their purchase decisions with these reference groups. Therefore, we propose that social comparison is an important alternative inference that needs to be considered when examining the effect of popularity information.

2.4. Inferences of Quality Evaluation and Social Comparison

Imagine consumers are making a purchase decision between a hit and niche product with

a display of sales volume on a shopping website. When a product's market size and sales volume are congruent, this suggests that the hit product has a higher sales volume than the niche product. In this condition, consumers with the inference of quality evaluation may view the higher sales volume of the hit product as a signal of higher quality and thus have a higher tendency to purchase the hit over the niche product. On the other hand, with the inference of social comparison, consumers may view the higher sales volume of the hit product as their reference group's choice and decide to follow their purchase decisions. This means that consumers with either inference have a higher tendency to purchase a hit over a niche product. Therefore, it is logical to infer the following hypothesis. Consumers' interpretations and purchase decisions under the condition of congruence are briefly presented in Table 1.

H1: When product's market size and sales volume are congruent, consumers are more likely to purchase a hit than a niche product.

Table 1. Consumers' Interpretations and Purchase Decisions under the Condition of Congruence

Popularity Information	Sales Volume	Inferences	Interpretations	Purchase Decisions
Congruence	Hit > Niche	Quality	Hit product has higher quality	Hit > Niche
		Social	Higher sales volume signals reference group of choice	Hit > Niche

When a niche product has a higher sales volume than a hit product, this suggests that a product's market size and sales volume are incongruent. With the inference of quality evaluation, the higher sales volume of the niche product conveys a signal that the niche

product must possess a higher quality in order to obtain higher sales volume than a hit product. This suggests that the probability for consumers to choose a niche product in the condition of incongruence should be significantly higher than the condition of congruence. On the other hand, with the inference of social comparison, consumers may interpret the sign of incongruence between the market size and sales volume as an inconsistent response from two potential reference groups. For a niche product with a higher sales volume, its small market size suggests that it is not a popular product among the general public, especially if compared with a hit product; yet the higher sales volume shows that it is sometimes more popular than the hit product. Consumers now face a dilemma in selecting which volume of customers to serve as their reference group. Certain consumers may be tempted by the higher sales volume of the niche product and thus choose that sales volume as their reference group. This suggests that the probability of choosing a niche product in the condition of incongruence should be significantly higher than that of congruence, where most consumers have a low tendency to purchase the niche product.

However, most consumers in this condition may hesitate to follow the strong sales volume of the niche product because the sales volume may merely represent preferences of certain consumers with special interests or needs for the niche product. Or it may be a temporary hype caused by certain stimuli. Most consumers may feel more comfortable to select the hit product that caters to a large market as their reference group because they believe their tastes are more similar to general consumers in the market. Since this

phenomenon does not appear in the condition when the inference of quality evaluation is dominant, this suggests that the incremental magnitude of choosing a niche product between the conditions of incongruence and congruence is different for consumers with different dominant inference. The level of increment should be higher with the inference of quality evaluation than with the inference of social comparison. Therefore, it is logical to infer the following hypothesis. Consumers' interpretations and purchase decisions under the condition of incongruence are briefed in Table 2.

H2: When product's market size and sales volume are incongruent, the probability of purchasing a niche product increases in comparison to the condition of congruence. The magnitude of increase is higher for consumers with the inference of quality evaluation than for those with the inference of social comparison.

Table 2. Consumers' Interpretations and Purchase Decisions
under the Condition of Incongruence

Popularity Information	Sales Volume	Inferences	Interpretations	Purchase Decisions
Incongruence	Niche > Hit	Quality	Niche product has higher quality	Probability of purchasing a niche product increases compared with the condition of congruence
		Social	Delema in choosing reference group	Probability of purchasing a niche product increases compared with the condition of congruence; yet, most purchase choices are dominated by the hit product

Chapter 3: Methodology

3.1. Experimental Design

The purpose of this research is to investigate and compare how consumers with different inferences interpret popularity information affected by market size and sales volume under the conditions of congruence and incongruence. The method of experiment is based on a completely randomized design. The design includes two independent variables, one moderator, and one dependent variable (Figure 1). The two independent variables are: 1) market size with the level of “Hit” and “Niche” and 2) sales volume with the level of “Hit High” and “Niche High”. First, every participant would see two products with differing market sizes: one is the hit product and the other is the niche product. Since they eventually have to choose one product between these choices, the market size is a within-subject design. Second, the sales volume is displayed next to the hit and niche product choices. When the sales volume of the hit product is higher than the sales volume of the niche product, it is considered as the level of “Hit High”, which could also be referred to as the condition of congruence. When the sales volume of the niche product is higher than the sales volume of the hit product, it is considered as the level of “Niche High”, which could also be referred to as the condition of incongruence. For example, when the sales volume of a chocolate-flavored cookie (Hit product) is 64 and the sales volume of a cinnamon-flavored cookie (Niche product) is 10, this could be

considered as the condition of “Hit High” (congruence) because the sales volume of a hit product is higher than the sales volume of a niche product. When the sales volume reverses for the hit and niche product, meaning the sales volume of the chocolate-flavored cookie is 10 and the sales volume of the cinnamon-flavored cookie is 64, this could be considered as the condition of “Niche High” (incongruence) because the sales volume of a niche product is higher than the sales volume of a hit product. Since participants would only see one of the levels “Hit High” or “Niche High” in their assigned condition, the sales volume is a between-subject design.

The moderator is inference with either “Quality Evaluation” or “Social Comparison”, which represent the two possible inferences in consumers’ perception. In order to prime consumers with the right kind of inference, sales volume by food connoisseurs was used to serve as a cue of product quality, whereas, sales volume by celebrities was used to simulate the effect of social comparison. Food connoisseurs are recognized as food experts who have high standards and are sensitive to the quality of food. Thus, we use them as a cue to induce the inference of quality evaluation. Celebrities have always been recognized as an effective reference group in the literature of social comparison, particularly for inspiring upward comparison (Lockwood and Kunda, 1997; Thrash and Elliot, 2003). We therefore use them to induce the inference of social comparison. Since participants could only see one primed inference in the assigned condition, the inference is a between-subject design. Finally, the dependent variable is consumers’ purchase decision, which illustrates whether participants

decided to purchase a hit or a niche product.

In conclusion, the design of this experiment is a mixed factorial design that includes both between- and within- subjects variables. The four conditions in this experiment are: Quality Evaluation Hit High (Congruence), Quality Evaluation Niche High (Incongruence), Social Comparison Hit High (Congruence), and Social Comparison Niche High (Incongruence).

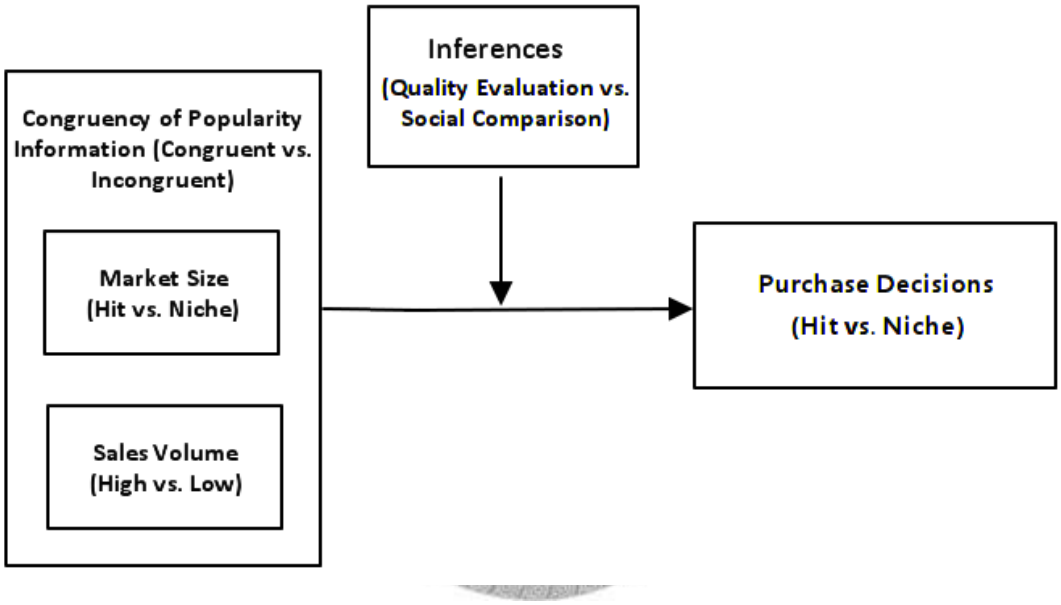


Figure 1. Research Model

3.2. Stimulus Materials

The two product choices that consumers see in the condition are one hit and one niche, differing in market size. The products selected for this experiment are all food related because food products are considered to be low-cost and can be frequently purchased by any group of consumers (Grunert and Ramus, 2005). A norming test was conducted based on the three pairs of products we chose for the experiment. The choices in pairs (hit vs. niche, respectively) are:

1) Cookies: Chocolate Cookies vs. Cinnamon Cookies, 2) Chips: BBQ-Flavored Chips vs. Exotic Vegetable-Flavored Chips, and 3) Drinks: Green Tea vs. Chinese Herbal Tea. One thing to note is that participants in all conditions were told that the price of the choices is the same, suggesting that price is not a factor to consider.

Fifty (50) volunteers were invited to make a purchase decision between the choices of Hit and Niche products for the product norming test, where no additional scenario or information was given. The results show that the majority of the responses consistently allocated the hit over niche choices across the three pairs of products (Cookies: Hit (.92) vs. Niche (.08); Chips: Hit (.66) vs. Niche (.34); Drinks: Hit (.78) vs. Niche (.22). These results show that the products we chose for the experiment are good representations for hit and niche products. The average percentage of the purchase decisions for the three products are Hit (.78) vs. Niche (.21). This result is kept as a baseline, which is used to compare with the four conditions in the official experiment when manipulated scenarios and information are added (Table 4).

In order to examine whether the expected inference (quality evaluation vs. social comparison) is properly induced, three questions of manipulation check measured by a six-point Likert scale are included at the end of each condition. Participants are asked to recall the condition while they are making a purchase decision in the experiment. Two questions are used to examine whether the inference of social comparison is successfully induced, whereas,

one question is implemented to examine whether the inference of quality evaluation is properly induced. As for the inference of social comparison, participants are asked to rate what level of impact "Other Consumers' Purchase Decision" has on their purchase decisions. In addition, participants are asked to rate their disappointment level if the product they intended to purchase is out of stock and it could not be purchased either on other websites or in physical stores. As for the inference of quality evaluation, participants are asked to rate what level of impact "Product Quality" has on their purchase decisions. We expect participants with different inferences should have a mixed feeling regarding these factors but the level of perceived impact should be different, per descriptions in prior literature.

Past research has shown that consumers with the inference of social comparison are significantly concerned with their reference groups' purchase decisions (Calder and Burnkrant, 1977; Corneo and Jeanne, 1997; Karlsson et al., 2005). If they fail to purchase the same product as their reference group does, they experience strong disappointment over not obtaining the product they feel entitled to own. Of course, this does not mean that participants with the inference of quality evaluation do not perceive impact from other consumers' purchase decisions or do not feel disappointed when they are unable to purchase the product. In fact, we believe that participants with either inference are affected by these two factors, just that the level of perceived impact is different. The key intention of these three manipulation checks is to examine whether the appropriate inference is induced as a primary inference in the right condition. We expect that participants with the inference of quality evaluation focus

more on the product's specifications related to quality than they focus on other consumers' decision, whereas the focus for consumers with the inference of social comparison is reversed. Moreover, when the purchase cannot be made as expected, consumers with the inference of quality evaluation feel disappointed to miss a quality product, whereas consumers with the inference of social comparison feel disappointed that they miss something they feel entitled to own. Therefore, participants with the inference of social comparison should perceive stronger impact from "Other Consumers' Purchase Decisions" and stronger disappointment when the purchase is not made than do participants with the inference of quality evaluation; whereas, participants with the inference of quality evaluation should perceive a stronger impact on "Product Quality" than do participants with the inference of social comparison.

3.3. Pilot Test

A pilot test was conducted in a computer lab located at a university in Taoyuan, Taiwan. The samples consisted of 20 volunteer staff and students from the university, who were randomly assigned to one of the four conditions (five samples per each condition). In addition, after completing the experiment, participants were asked to perform a face-to-face interview to answer a series of open-ended questions in relation to the clarity of the experiment. The pilot results consistently matched our expectation and confirmed that the design and clarity of the experiment were appropriate.

3.4. Experimental Procedure

Voluntary participants were randomly assigned to one of the four conditions online. They were asked to imagine that they were shopping on a website that recently conducted a purchase behavior survey with a specific group of consumers. Participants in the condition of quality evaluation were told that the survey was conducted with food connoisseurs who are highly sensitive to taste and food quality; whereas participants in the social comparison condition were told that the survey was conducted with celebrities who are generally recognized as indicators of fashion trends. Participants were then presented with a pair of products that had been purchased either by the food connoisseurs or celebrities, depending on the conditions. Each pair of products included one hit and one niche, with the sales volume by food connoisseurs or celebrities. At last, participants were asked to make a purchase decision between the two products, meaning they ought to purchase either a hit or a niche choice. In total, they were asked to make purchase decisions three times with different products. After completing the experiment, every participant received a gift worth US$5 in gratitude for their participation. After completing the purchasing questions, participants were asked to answer three questions regarding manipulation check, and 12 questions related to their online shopping experience and demographic background.

3.5. Participants

A mass email describing the purpose of the experiment was sent to potential candidates in universities and companies in Taiwan. Participants who responded and were willing to

participate in the experiment were asked to conduct the experiment online by following the self-explanatory guided information. Every participant was randomly assigned to one of the four conditions. At last, a total of 200 volunteer participants, with 50 in each condition, were recruited. In average, it took around 10 minutes to finish the assigned task, and every participant received a gift worth US$5 dollars as a token of appreciation for completing the task.

In general, the participants in this experiment compose of 44% male and 56% female. The majority of participants (88.5%) are aged 15 to 34. While 52% of participants are working in industry, 48% of participants are students. In order to verify the external validity of this study, the demographic information of the participants in this experiment was compared against a country-wide survey in Taiwan, Broadband Usage, 2012 (TWNIC, 2012). The comparison results are illustrated in Appendix C. The overall distributions between the two studies were similar, except for some minor gaps that are addressed in the following: First, the samples collected from the research of Broadband Usage (2012) were 100% from Taiwan, whereas, the samples collected for this research consist of a certain percentage whose nationality is not Taiwanese (50.50%). The foreign samples in this research are not expected to create a concern because these samples are mostly international students from Malaysia who are capable of reading and writing Chinese and have a Chinese family background. Additionally, a K - test was performed to ensure that participants' nationality does not create a significant variance on the responses. The results show that participants' nationality, either Taiwanese (50.50%) or Non-Taiwanese (49.50%), does not create a significant difference for consumers' purchase decisions (D = .1051; p = .638). Second, the percentage of student body in this research (48%) is relatively higher than that in the research on Broadband Usage (2012) (15.74%). Also, due to the higher percentage of student body, the age range (15 to 34) of the majority of respondents in this research was relatively lower than the age range (25 to 54) of the majority of responders in the research on Broadband Usage (2012). However, students and

young people are recognized as a major population for online purchases (Ofcom, 2008). Moreover, the fact that the majority (78.5%) of the participants in this research had experience shopping online, while only forty-three percent of participants in the research of Broadband Usage (2012) had experience shopping online, shows that the participants in this research are the appropriate targets for our observation. In addition, a K Test was performed and the result showed no significant difference between the sources of students (48%) and non-students (52%) (D = .0905; p = .8077). In conclusion, the participants in this research are appropriate and are good representations of the mother population.

Chapter 4: Results and Discussion

The data obtained for manipulation check was analyzed using MANOVA in SAS 9.3. The overall trend of participants' responses matches our expectation that participants with the inference of social comparison reported perceiving a stronger impact from "Other Consumers' Purchase Decisions" and felt stronger disappointment when the product was not purchased than did participants with the inference of quality evaluation (Sales Volume: Social (4.55) > Quality (4.01), F (1, 198) = 8.45, MSe = 341.74, p = .0041; Disappointment: Social (3.26) > Quality (2.96), F (1,198) = 3, MSe = 297.08, p = .0849). On the other hand, participants with the inference of quality evaluation reported perceiving a stronger impact from "Product Quality" than did participants with the inference of social comparison, although the difference is not significant (Product Quality: Quality (3.17) > Social (2.93); F (1,198) = 1.65, MSe = 346.62, p = .20). One possible explanation of the insignificance is that participants with either inference perceive "Product Quality" as an important factor for their purchase decisions. Thus, the difference between the two conditions is not significant. However, participants' overall responses to the three questions show different patterns between the two inferences. Looking at the average responses to each question respectively, participants in the social condition perceive a stronger impact on the questions related to social inference, whereas, participants in the quality condition perceive a stronger impact on the questions related to quality inference. This shows that the primary inference is induced for the right conditions, as

expected.

As regards the analysis of participants' purchase decisions, since the dependent variable is in binominal form and independent variables are in categorical format, with both fixed and random effects, Generalized Linear Mixed Model (GLMM) was used in SAS 9.3 for inferential analysis. The results show that the effects of sales volume (F (1, 1192) = 62.19, p < .0001) and market size (F (1, 1192) = 127.54; p < .0001) are significant, while the effect of inference is not significant (F (1, 1192) = 0; p = .9999). Moreover, the interactive effect of popularity, market size, and inference is significant (F (4, 1192) = 2.72; p = .0285).

Consumers' three purchase decisions made for the three products were averaged, since the results of the inferential analysis show that the product type does not create a significant difference in consumers' purchase decisions. Participants' average percentages of purchase decisions are shown in Table 3. When product's market size and sales volume are congruent, a significantly higher percentage of consumers both with the inferences of quality evaluation and social comparison choose a hit product than a niche product (Quality Evaluation: Hit (.77) > Niche (.23); t (1192) = 6.16, SD = .193, p < .0001; Social Comparison: Hit (.78) > Niche (.22), t (1192) = 6.42, SD = .1971, p < .0001). This is consistent with our expectation for the condition of congruence; therefore, hypothesis 1 is supported.

When a product's market size and sales volume are incongruent, the percentages of choosing a niche choice are significantly higher compared to the condition of congruence

(Quality Evaluation: Incongruence (.51) > Congruence (.23); F (1, 1192) = 24.16, p < .0001; Social Comparison: Incongruence (.38) > Congruence (.22); F (1, 1192) = 8.97, p = .0028). However, the magnitude of increase is different between the two inferences. The inference of quality evaluation has a marginally higher magnitude of increase than the inference of social comparison (Quality (0.51 – 0.23 = 0.28) + > Social (0.38 – 0.22 = 0.16); t (98) = 1.4639, SD = .082 p = .00732). Thus, Hypothesis 2 is supported.

Two things should be specially noted for the results of incongruence. First, with the inference of social comparison, the percentage of choosing a hit product is significantly higher than that for a niche product (Hit (.62) > Niche (.38); t (1192) = 2.91, SD = .1682, p = .0037), which is a different purchase pattern from the condition when the inference of quality evaluation is dominant. Based on the scenario in the experiment, although the sales volume by celebrities of the niche product is higher than that of the hit product, participants may still choose to believe that their tastes regarding the low-cost, ordinary food provided in the scenario are more likely to be similar to the general public in the market than the celebrities who seem to be more superior. Thus, they would rather follow the tastes of general consumers in the market and purchase the hit product, disregarding the fact that the niche product has a high sales volume among celebrities. This result illustrates that the inference of social comparison has been successfully induced, which leads to a different purchase decision from the inference of quality evaluation. Second, participants' average percentages of purchase decisions in the condition of congruence are very similar to that in baseline (Quality:

Hit (.77) vs. Niche (.23); Social: Hit (.78) vs. Niche (.22); Baseline: Hit (.78) vs. Niche (.21)) (Table 3 and Table 4). This suggests that the effect of popularity information and inference do not impact consumers' purchase decisions much. However, participants' average percentages of purchase decisions in the condition of incongruence are very different from that in baseline and the patterns between the two inferences are dramatically different. This suggests that the effect of popularity information and inferences jointly influence participants' purchase decisions, which matches the cenftral belief of this research.

Table 3. Average Percentages of Purchase Decisions for Four Conditions

Popularity Information	Sales Volume	Market Size	Inference	
			Quality	Social
Congruence	High	Hit	.77	.78
	Low	Niche	.23	.22
Incongruence	Low	Hit	.49	.62
	High	Niche	.51	.38

Table 4. Average Percentages of Purchase Decisions for Baseline

Popularity Information	Sales Volume	Inference	Market Size	Baseline
None	None	None	Hit	.78
			Niche	.21

Chapter 5: Conclusions

5.1. Conclusions

The emergence of the Internet has fundamentally changed how sellers and consumers supply and respond to popularity information. As to sellers, Internet technology has enabled e-businesses to carry a wide variety of product assortments, including both hit and niche products and allows them to implement up-to-the-minute sales volume next to every product with relatively low cost and effort. This means that a product's market size and sales volume are linked and jointly influence consumers' purchase decisions on the Internet, which is not usually the condition in the physical channels. As to consumers, the Internet allows them to contact different people -- regardless of whether they know or do not know them in the physical world -- and exchange information with them. Past research has shown that consumers are positively affected by online social influence (Wu and Lee, 2008a, 2008b). Thus, it is logical to infer that consumers may interpret popularity information, which reflects the actions of others, from a social perspective, while they may also interpret it from a product perspective (quality evaluation) as predicted in the previous literature. Moreover, due to a wide variety of product selections on the Internet, products in similar categories may be placed together for ease of access. This suggests that consumers may often see hit and niche products in the same category placed together, each with their own higher or lower sales volume, which matches the conditions of congruence and incongruence described in this

research. With different dominant inferences in mind, consumers may make different interpretations of the conditions of congruence and incongruence and thus make different purchase decisions. All of these have shown that the mechanism behind popularity information is much more complicated on the Internet than it was in the physical channel. We believe the empirical findings of this research have shed additional light in understanding the complicated effect of popularity information on the Internet and provide meaningful theoretical and managerial implications.

5.2. Theoretical Implications

Different from the traditional research on popularity information that was based solely on one inference, this research has considered two possible inferences and incorporated them with characteristics common on the Internet. Our empirical findings show: When market size and sales volume are congruent, consumers have a higher tendency to purchase a hit over a niche product. Moreover, the average percentages of purchase decisions allocated to hit and niche choices are similar to that in the baseline, suggesting the effect of popularity is not apparent in this condition (Table 3 and Table 4). These results match the belief in Tucker and Zhang's (2011) research that popularity information does not positively affect consumers' purchase decisions if its high sales volume is driven by its naturally wide appeal to the mainstream market.

On the other hand, when market size and sales volume are incongruent, results with the

inference of quality evaluation show that the percentages of choosing a niche product are significantly higher than those in the condition of congruence, which also matches Tucker and Zhang's (2011) belief. Yet, this research has gone beyond Tucker and Zhang's (2011) research scope by incorporating the inference of social comparison into the research model and making comparisons with the inference of quality evaluation. Results with the inference of social comparison show that the percentage of purchasing a niche product in the condition of incongruence is also significantly increased when compared to the condition of congruence. However, the magnitude of increase is not as strong as when the inference of quality evaluation is dominant because more choices allocate the hit product in this condition. These different findings from different dominant inferences may clarify the mixed evidence in the literature that popularity information may boost the sales for a hit product as described in the concept of "winner-takes-all" or a niche product as described in the concept of "long-tail". Our research provides legitimate explanations for these situations and allows the effect of popularity information to be more generally applied in the context of online purchases.

Finally, much research in the Marketing literature has focused to understand how online social influences could be exerted by different roles and channels on the Internet (e.g. online rating or online reviews) (Bickart and Schindler, 2001; Chevalier and Mayzlin, 2006; Zhu and Zhang, 2010). Our research has made contributions in understanding how online social influence could be exerted by celebrities and general consumers through popularity information (market size and sales volume). Specifically, our research has explicitly analyzed

consumers' interpretations of popularity information based on the inference of social comparison, which is a prominent kind of social influence, and how such interpretation influences consumers' purchase decisions. Future research may follow this up and continue exploring online social influence with popularity information.

5.3. Managerial Implications

The empirical results of this research provide practical implications for e-businesses as to how they could incorporate relevant strategies using popularity information to promote products with differing market sizes. First, when market size and sales volume are congruent, e-businesses do not need to do much if intending to promote a hit product because consumers already have a higher tendency to purchase a hit over a niche product. Releasing popularity information in this condition does not seem to exert a strong influence.

Second, when market size and sales volume are incongruent, the effect of popularity information becomes apparent and e-businesses' strategies should be aligned with the effect. If intending to promote a hit product, e-business should provide cues to stimulate consumers' inference of social comparison. Many methods may be used to induce the inference of social comparison. For example, celebrity endorsements have long been used as an effective tactic to induce consumers' inference of social comparison because celebrities serve as an effective attention-getter and reference group identifier (Wei and Lu, 2013). Or e-businesses could strategically supply social-related information, such as 'number one sales on the Internet' or

‘most wanted product by celebrities’, etc., on the website or actively deliver this information to potential consumers through emails. Moreover, e-businesses should emphasize the large market size of the hit product with the intention to stimulate consumers’ interests to treat the large market size as their reference group and follow their purchase decisions. By doing so, consumers hopefully would pay less attention to the higher sales volume of the niche product but focus more on the large market size of the hit product.

On the other hand, if intending to promote a niche product, e-businesses may prepare consumers either with the inference of quality evaluation or social comparison. Our empirical results show that both inferences may significantly boost the sales for the niche product in comparison to the condition of congruence, yet the inference of quality evaluation has a higher magnitude of increase than the inference of social comparison. Thus, e-businesses may consider prioritizing the inference of quality evaluation to receive a better effect from promoting a niche product. In order to induce the inference of quality evaluation as a primary inference, e-businesses could invite opinion leaders to share the functional specifications of the product either through a store event or through blogs. In addition, e-businesses may emphasize the high sales volume of the niche product to stimulate consumers’ inference of high quality. With the right kind of inference in mind and the right strategies aligned, the effect of popularity information may be maximized and consumers’ purchase intentions may be affected as intended.

5.4. Limitations

This research contains some limitations that warrant future research. First, although previous studies have reported that product type may impact consumers' purchase behavior, we do not treat the product type as a contingent factor in this research because it is not within the scope of this research. Based on the recommendations provided by Lynch (1982), conducting an experiment with homogenous product type would allow researchers to focus their observations on the main causal relationship. Therefore, we intentionally kept the product type in the experiment homogenous to food-related products only. In order to minimize the impact of product type, all the selected products are low-cost and could be frequently consumed by different levels of consumers. Nevertheless, we still did not eliminate the possibilities that product type in some conditions may become a contingent factor that influences the dependent variable or its homogeneity may affect the internal validity of the experiment. In those conditions, additional studies expanding to different product categories would be helpful.

Second, the selection of hit and niche products are geared toward the taste of the Taiwanese/Chinese audiences, which may be different from audiences in other countries. For example, a cinnamon-flavored cookie is considered as a niche product in the Taiwan market whereas it could be considered as a hit product in America because of its wide availability. Future research could consider selecting hit and niche products that are more generalized to

avoid the limitation of localization.

5.5. Future Research

There are many interesting future directions that could be derived from this research. For example, the kind of comparison we used to manipulate the effect of social comparison in the experiment is upward comparison with a possible motivation of self-improvement, which is a kind of social comparison that focuses on comparing with an upward (superior) target. Besides considering this particular type of social comparison, future research could expand it by exploring social comparison with different directions (e.g. someone similar and worse-off) and different motivations (e.g. self-evaluation and self-enhancement). Another interesting direction would be to examine consumers' emotions when different kinds of inferences are induced. Particularly for the inference of social comparison, past literature has indicated that consumers perceive stronger happiness and disappointment when the effect of social comparison is induced (Ackerman et al., 2000; Hoch and Loewenstein, 1991; Wu and Lee, 2008a, 2008b). Consistent with this prediction, the results of our manipulation check show that participants with the inference of social comparison feel marginally more disappointed when the product is not purchased in comparison to the participants with the inference of quality evaluation. Further study could investigate this in more depth by specifically assessing consumers' psychological states (e.g. happiness and disappointment levels that consumers perceive when the purchase is made or not made) with different inferences induced from

popularity information.

Moreover, the key scope of this research is to examine how consumers may interpret popularity information when different kinds of inferences are induced. This suggests that the focus of this research is to inspect the characteristic of human conformity rather than uniqueness, although both aptitudes are part of human nature. Future research could perform an aptitude test to understand participants' level of conformity and focus their attention in observing participants who obtain a high score of conformity. Finally, some other possible research avenues are to explore whether popularity information can be moderated by other marketing variables, such as brand name, price, or gender-specific products.

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Appendix A: Norming Test for Product Selections

1. The first product you are going to purchase is a sweet snack. See below for two choices of cookies with similar price.

   Chocolate-flavored cookies
   Cinnamon-flavored cookies

   If you have to choose one from these two to make a purchase, which one would you choose?

   1) Chocolate-flavored cookies

   2) Cinnamon-flavored cookies

2. The second product you are going to purchase is a salty snack. See below for two choices of chips with similar price.

   BBQ-flavored chips
   Exotic-flavored vegetable chips

   If you have to choose one from these two to make a purchase, which one would you choose?

   1) BBQ-flavored chips

   2) Exotic-flavored vegetable chips

3. The third product you are going to purchase is a drink. See below for two choices of drink with similar price.

   Tender leaf green tea
   Chinese herbal drink

   If you have to choose one from these two to make a purchase, which one would you choose?

   1) Tender leaf green tea

   2) Chinese herbal drink

Appendix B: Questions and Scenario for Conditions of Quality Evaluation and Social Comparison

Quality Evaluation Hit Popular (Congruence)

Imagine you have the need to purchase 2 snacks and 1 drink online. You discover the shopping website that you intend to shop on have reported the result of a purchase behavior survey they recently conducted. The survey targets various types of food connoisseurs, including chefs, food blog experts, professional food critics, etc. One common characteristic they share is that they are all highly sensitive to taste and have high standards regarding food quality. This makes everyone curious to find out what types of food people like them consume in private. Let's go check it out!

1. The first product you are going to purchase is a sweet snack. See below for two choices of cookies with similar price.

   Chocolate-flavored cookies: The survey results show 64 food connoisseurs have purchased this product.
   Cinnamon-flavored cookies: The survey results show 10 food connoisseurs have purchased this product.

   If you have to choose one from these two to make a purchase, which one would you choose?

   1) Chocolate-flavored cookies: purchased by 64 food connoisseurs.

   2) Cinnamon-flavored cookies: purchased by 10 food connoisseurs.

2. The second product you are going to purchase is a salty snack. See below for two choices of chips with similar price.

   BBQ-flavored chips: The survey results show 68 food connoisseurs have purchased this product.
   Exotic-flavored vegetable chips: The survey results show 12 food connoisseurs have purchased this product.

   If you have to choose one from these two to make a purchase, which one would you choose?

   1) BBQ-flavored chips: purchased by 68 food connoisseurs.

2) Exotic-flavored vegetable chips: purchased by 12 food connoisseurs.

3. The third product you are going to purchase is a drink. See below for two choices of drink with similar price.

Tender leaf green tea: The survey results show 69 food connoisseurs have purchased this product.
Chinese herbal drink: The survey results show 13 food connoisseurs have purchased this product.

If you have to choose one from these two to make a purchase, which one would you choose?

1) Tender leaf green tea: purchased by 69 food connoisseurs.

2) Chinese herbal drink: purchased by 13 food connoisseurs.

Quality Evaluation Niche Popular (Incongruence)

Imagine you have the need to purchase 2 snacks and 1 drink online. You discover the shopping website that you intend to shop on have reported the result of a purchase behavior survey they recently conducted. The survey targets various types of food connoisseurs, including chefs, food blog experts, professional food critics, etc. One common characteristic they share is that they are all highly sensitive to taste and have high standards regarding food quality. This makes everyone curious to find out what types of food people like them consume in private. Let's go check it out!

1. The first product you are going to purchase is a sweet snack. See below for two choices of cookies with similar price.

Chocolate-flavored cookies: The survey results show 10 food connoisseurs have purchased this product.
Cinnamon-flavored cookies: The survey results show 64 food connoisseurs have purchased this product.

If you have to choose one from these two to make a purchase, which one would you choose?

1) Chocolate-flavored cookies: purchased by 10 food connoisseurs.

2) Cinnamon-flavored cookies: purchased by 64 food connoisseurs.

2. The second product you are going to purchase is a salty snack. See below for two choices of chips with similar price.

   BBQ chips: The survey results show 12 food connoisseurs have purchased this product.
   Exotic vegetable chips: The survey results show 68 food connoisseurs have purchased this product.

   If you have to choose one from these two to make a purchase, which one would you choose?

   1) BBQ-flavored chips: purchased by 12 food connoisseurs.

   2) Exotic-flavored vegetable chips: purchased by 68 food connoisseurs.

3. The third product you are going to purchase is a drink. See below for two choices of drink with similar price.

   Tender leaf green tea: The survey results show 13 food connoisseurs have purchased this product.
   Chinese herbal drink: The survey results show 69 food connoisseurs have purchased this product.

   If you have to choose one from these two to make a purchase, which one would you choose?

   1) Tender leaf green tea: purchased by 13 food connoisseurs.

   2) Chinese herbal drink: purchased by 69 food connoisseurs.

Social Comparison Hit Popular (Congruence)

Imagine you have the need to purchase 2 snacks and 1 drink online. You discover the shopping website that you intend to shop on have reported the result of a purchase behavior survey they recently conducted. The survey targets celebrities from various fields, including films/shows business, politics, gymnastics etc. One common characteristic they share is that they are all widely recognized and highly popular. This makes everyone curious to find out what types of food people like them consume in private. Let's go check it out!

1. The first product you are going to purchase is a sweet snack. See below for two choices of cookies with similar price.

Chocolate-flavored flavored cookies: The survey results show 64 celebrities have purchased this product.
Cinnamon-flavored cookies: The survey results show 10 celebrities have purchased this product.

If you have to choose one from these two to make a purchase, which one would you choose?

1) Chocolate-flavored cookies: purchased by 64 celebrities.

2) Cinnamon-flavored cookies: purchased by 10 celebrities.

2. The second product you are going to purchase is a salty snack. See below for two choices of chips with similar price.

BBQ-flavored chips: The survey results show 68 celebrities have purchased this product.
Exotic-flavored vegetable chips: The survey results show 12 celebrities have purchased this product.

If you have to choose one from these two to make a purchase, which one would you choose?

1) BBQ-flavored chips: purchased by 68 celebrities.

2) Exotic-flavored vegetable chips: purchased by 12 celebrities.

3. The third product you are going to purchase is a drink. See below for two choices of drink with similar price.

Tender leaf green tea: The survey results show 69 celebrities have purchased this product.
Chinese herbal drink: The survey results show 13 celebrities have purchased this product.

If you have to choose one from these two to make a purchase, which one would you choose?

1) Tender leaf green tea: purchased by 69 celebrities.

2) Chinese herbal drink: purchased by 13 celebrities.

Social Comparison Niche Popular (Incongruence)

Imagine you have the need to purchase 2 snacks and 1 drink online. You discover the shopping website that you intend to shop on have reported the result of a purchase behavior survey they recently conducted. The survey targets celebrities from various fields, including films/shows business, politics, gymnastics etc. One common characteristic they share is that they are all widely recognized and highly popular. This makes everyone curious to find out what types of food people like them consume in private. Let's go check it out!

1. The first product you are going to purchase is a sweet snack. See below for two choices of cookies with similar price.

   Chocolate-flavored cookies: The survey results show 10 celebrities have purchased this product.
   Cinnamon-flavored cookies: The survey results show 64 celebrities have purchased this product.

   If you have to choose one from these two to make a purchase, which one would you choose?
   1) Chocolate-flavored cookies: purchased by 10 celebrities.
   2) Cinnamon-flavored cookies: purchased by 64 celebrities.

2. The second product you are going to purchase is a salty snack. See below for two choices of chips with similar price.

   BBQ-flavored chips: The survey results show 12 celebrities have purchased this product.
   Exotic-flavored vegetable chips: The survey results show 68 celebrities have purchased this product.

   If you have to choose one from these two to make a purchase, which one would you choose?
   1) BBQ-flavored chips: purchased by 12 celebrities.
   2) Exotic-flavored vegetable chips: purchased by 68 celebrities.

3. The third product you are going to purchase is a drink. See below for two choices of drink with similar price.

   Tender leaf green tea: The survey results show 13 celebrities have purchased this product.

Chinese herbal drink: The survey results show 69 celebrities have purchased this product.

If you have to choose one from these two to make a purchase, which one would you choose?

1) Tender leaf green tea: purchased by 13 celebrities.

2) Chinese herbal drink: purchased by 69 celebrities.

Appendix C: Questions for Manipulation Check

1. Please recall the condition while you were making a purchase decision just now. What level of impact did “Sales Volume” impact your purchase decision? (Note: Please reflect on the purchase decision you made just now during the experiment, not the general decision you regularly make)

Please fill in the level of impact you perceive:

Absolutely Not Affected	Not Affected	Somewhat Not Affected	Somewhat Affected	Quite Affected	Strongly Affected

2. Please recall the condition while you were making a purchase decision just now. What level of impact did “Product Quality” impact your purchase decision? (Note: Please reflect on the purchase decision you made just now during the experiment not the general decision you regularly make)

Please fill in the level of impact you perceive:

Absolutely Not Affected	Not Affected	Somewhat Not Affected	Somewhat Affected	Quite Affected	Strongly Affected

3. Please recall the condition while you were making a purchase decision just now. If the product you intended to purchase was out of stock and it could not be purchased either on other websites or in physical stores, do you think you would feel disappointed for not being able to make the purchase?

Please fill in the level of disappointment you perceive:

Absolutely Not Disappointed	Not Disappointed	Somewhat Not Disappointed	Somewhat Disappointed	Quite Disappointed	Strongly Disappointed

Appendix D: Analysis of Demographic Information and Online Purchase Experience

Comparisons of Demographic Information				
Data Source	A Survey of Broadband Usage in Taiwan, 2012		This Research	
Sample Size	200		3088	
Item	Number of Responses	Percentage of Responses	Number of Responses	Percentage of Responses
What is your nationality				
Taiwan	101	50.50%	3088	100.00%
Other	99	49.50%	0	0.00%
What is your gender				
Male	88	44.00%	1552	50.26%
Female	112	56.00%	1536	49.74%
In which place do you currently live				
Keelung City	2	1.00%	66	2.14%
Taipei City	11	5.50%	173	5.60%
Xinbei City	16	8.00%	243	7.87%
Taoyuan County	29	14.50%	310	10.04%
Hsinchu City	36	18.00%	27	0.87%
Hsinchu County	6	3.00%	48	1.55%
Miaoli County	16	8.00%	73	2.36%
Taichung City	5	2.50%	358	11.59%
Changhua County	1	0.50%	111	3.59%
Nantou County	0	0.00%	111	3.59%
Yunlin County	1	0.50%	114	3.69%
Chiayi City	0	0.00%	63	2.04%
Chiayi County	0	0.00%	94	3.04%
Tainan City	2	1.00%	366	11.85%
Kaohsiung County	2	1.00%	297	9.62%
Pingtung County	1	0.50%	149	4.83%
Ilan City	1	0.50%	105	3.40%
Hualien	0	0.00%	60	1.94%
Taitung	0	0.00%	95	3.08%
Penghu	0	0.00%	100	3.24%
Kinmen	0	0.00%	100	3.24%
Lienchiang	0	0.00%	25	0.81%
Other	71	35.50%	0	0.00%

Comparisons of Demographic Information				
Data Source	This Research		Broadband Usage in Taiwan, 2012	
Sample Size	200		3088	
Item	Number of Responses	Percentage of Responses	Number of Responses	Percentage of Responses
What is your occupation				
Agriculture Forestry Fishing & Animal Husbandry	1	0.50%	181	5.86%
Mining and quarrying sectors	0	0.00%	1	0.03%
Electricity and gas sectors	0	0.00%	3	0.10%
Manufacturing	30	15.00%	430	13.92%
Construction	8	4.00%	102	3.30%
Real Estate	0	0.00%	6	0.19%
Wholesale & Retail Trade	8	4.00%	162	5.25%
Transportation and warehousing	0	0.00%	52	1.68%
Accommodation & Food Services	1	0.50%	107	3.47%
Information & Communication	7	3.50%	54	1.75%
Finance and Insurance	0	0.00%	61	1.98%
Support services	0	0.00%	41	1.33%
Education Services	7	3.50%	103	3.34%
Other Services	15	7.50%	139	4.50%
Water supply and pollution control sec	0	0.00%	6	0.19%
Professional Scientific & Technical Services	5	2.50%	46	1.49%
Public Administration and National defense; Mandatory Social Security	2	1.00%	160	5.18%
Human Health & Social Work Services	3	1.50%	59	1.91%
Arts, Entertainment, and Recreation	5	2.50%	20	0.65%
Freelance	1	0.50%	39	1.26%
Retirement	0	0.00%	243	7.87%
Unemployed	2	1.00%	153	4.95%
Student	96	48.00%	486	15.74%
Homemaker	2	1.00%	421	13.63%
Refuse to answer	2	1.00%	11	0.36%
Other	5	2.50%	2	0.06%

Comparisons of Demographic Information				
Data Source	This Research		Broadband Usage in Taiwan, 2012	
Sample Size	200		3088	
Item	Number of Responses	Percentage of Responses	Number of Responses	Percentage of Responses
What is your education level				
Primary School and Below	1	0.50%	429	13.89%
Middle School	7	3.50%	448	14.51%
High School	31	15.50%	928	30.05%
Vocational School	28	14.00%	395	12.79%
College	94	47.00%	748	24.22%
Graduate School	34	17.00%	136	4.40%
Refuse To Answer	5	2.50%	4	0.13%
What is your monthly income				
No Income	70	35.00%	975	31.57%
Below NT10,000	11	5.50%	278	9.00%
NT10,001～NT20,000	10	5.00%	248	8.03%
NT 20,001～NT30,000	20	10.00%	504	16.32%
NT30,001～NT40,000	13	6.50%	354	11.46%
NT40,001～NT50,000	17	8.50%	249	8.06%
NT50,001～NT60,000	11	5.50%	150	4.86%
NT60,001～NT70,000	8	4.00%	77	2.49%
NT70,001～NT80,000	3	1.50%	40	1.30%
NT80,001～NT90,000	1	0.50%	21	0.68%
NT90,001 ~ NT100,000	0	0.00%	18	0.58%
Above NT100,001	5	2.50%	51	1.65%
Not Stable	5	2.50%	64	2.07%
Don't Know	6	3.00%	10	0.32%
Refuse to Answer	20	10.00%	49	1.59%
What is your age				
12 ～14	2	1.00%	137	4.44%
15 ～19	60	30.00%	251	8.13%
20 ～24	54	27.00%	250	8.10%
25 ~ 34	63	31.50%	559	18.10%
35 ~ 44	14	7.00%	539	17.45%
45 ~ 54	7	3.50%	549	17.78%
Above 54	0	0.00%	803	26.00%

Comparisons of Online Purchase Experience				
Data Source	This Research		Broadband Usage in Taiwan, 2012	
Sample Size	200		3088	
Item	Number of Responses	Percentage of Responses	Number of Responses	Percentage of Responses
Have you ever had experience shopping online				
Yes	157	78.50%	1334	43.20%
No	43	21.50%	1754	56.80%
How often do you shop online				
Not Applied	43	21.50%	1754	56.80%
At least once every week	5	2.50%	94	3.04%
At least once every half month	12	6.00%	98	3.17%
At least once every month	28	14.00%	308	9.97%
At least once every three months	46	23.00%	310	10.04%
At least once every half year	30	15.00%	252	8.16%
At least once every year	28	14.00%	178	5.76%
Other	8	4.00%	94	3.04%
What is the highest amount (single time) you have spent in the history of your online purchases				
Not Applied	43	21.50%	1754	56.80%
Below NT 100	5	2.50%	3	0.10%
NT 101～NT 500	19	9.50%	92	2.98%
NT 501～ NT 1,000	27	13.50%	156	5.05%
NT 1,001～ NT 2,000	37	18.50%	291	9.42%
NT 2,001～ NT 5,000	23	11.50%	379	12.27%
NT 5,001～ NT 10,000	15	7.50%	131	4.24%
NT 10,001～ NT 20,000	12	6.00%	118	3.82%
NT 20,001～ NT 50,000	6	3.00%	112	3.63%
Above NT 50,001	4	2.00%	32	1.04%
Unsure/Don't Remember	9	4.50%	20	0.65%

Comparisons of Online Purchase Experience				
Data Source	This Research		Broadband Usage in Taiwan, 2012	
Sample Size	200		3088	
Item	Number of Responses	Percentage of Responses	Number of Responses	Percentage of Responses
Which kind of product do you most frequently purchase online				
Not Applied	43	21.50%	1754	56.80%
Furniture	1	0.50%	4	0.13%
Automotive	2	1.00%	20	0.65%
Computer Related & Peripheral Products	4	2.00%	42	1.36%
Electronics (Cellphone, Camera & MP3)	17	8.50%	164	5.31%
Home Audio & Theater	1	0.50%	17	0.55%
Movies & Music	12	6.00%	12	0.39%
Books & Office Supplies	21	10.50%	223	7.22%
Art/Antiques	0	0.00%	4	0.13%
Watches & Clocks	1	0.50%	0	0.00%
Daily Supplies	6	3.00%	118	3.82%
Toys & Video Games	9	4.50%	38	1.23%
Erotic Products	1	0.50%	0	0.00%
Beauty Products	6	3.00%	63	2.04%
Pharmacy & Health Products	2	1.00%	14	0.45%
Clothing, Shoes & Jewelry	53	26.50%	469	15.19%
Infant & Kid Products	1	0.50%	18	0.58%
Sports, Fitness & Outdoors	4	2.00%	9	0.29%
Pets Related Items	0	0.00%	10	0.32%
Grocery	2	1.00%	70	2.27%
Gardening	0	0.00%	3	0.10%
Boutique	3	1.50%	0	0.00%
Online Booking Service	9	4.50%	19	0.62%
Other	2	1.00%	17	0.55%