The effects of relative and referent thinking on tourism product design

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A B S T R A C T

This study adopts three field experiments to analyze the influence of relative and referent thinking in online tourism auctions of bed-and-breakfast(B&B) accommodations on consumer bidding behavior. In study one, the starting bid price equals or is lower than the reference price. Relative and referent thinking are applied to evaluate the products to see whether consumers prefer monetary or non-monetary sales promotions and if they are willing to pay a higher end-price. In study two, moderate (extreme) deviation appears between the start bidding price and reference price, non-monetary (monetary) sales promotions are favored and so higher end-price would be paid. In study three, consumers tended to pay a higher end price due to the symbolic meaning of luxury B&B, for example greater wealth and social status, and did not have a preference for monetary sales promotions. The findings could help future researchers when designing tourist products for online auction strategies.

1. Introduction

Online auctions are a dynamic pricing instrument in which consumers can obtain what they want by bargaining online and has attracted the attention of tourism marketers (Fuchs, Eybl, & Höpken, 2011). Researchers have thus called for more research into product pricing on online auction websites as well as the related buying behaviors of bidders (e.g., Nusair, Parsa, & Cobanoglu, 2011). Tourism and marketing researchers (e.g., Fuchs et al., 2011; Saini, Rao, & Monga, 2010) also agree that consumers enjoy opportunities when engaging in online bargaining shopping.

Whether consumers simply prefer low-priced products with sale promotions, or higher priced products with sale promotions and bidding opportunities is of particular interest. Scholars have examined multiple aspects of online bidding behavior that affect purchasing. These include such things as socio-economic factors and frequency of the use of e-tourism (Szopinski & Staniewski, 2016); free gifts with purchase and online purchase satisfaction (Zhu, Chang, & Chang, 2015); starting bid price, product quantity, reserve price, reputation feedback systems, and the degree of bargaining that is allowed (Drake, Hall, Cegielski, & Byrd, 2015; Lin, Chou, Weng, & Hsieh, 2010; Reynolds, Gilkeson, & Niedrich, 2009; Suter & Hardesty, 2005).

Until now, only a few studies have focused on different product prices with sales promotions (e.g., Liang & Chen, 2012), so there exists

a theoretical gap because past studies were lacking in theoretical and experimental evidence to evaluate consumers' online bidding behaviors in the tourism field. It is necessary for the tourism industry to develop better online bidding strategies in order to attract more consumers. The present study focuses on Taiwan's bed & breakfast (B&B) industry. Tourism scholars (e.g., Chen, Lin, & Kuo, 2013; Chiu, 2018; Kuo, Tseng, & Chen, 2018) have discussed how B&Bs in Taiwan reflect a variety of developmental trends due to governmental regulations and environmental issues. B&Bs in Taiwan emphasize various characteristics such as natural beauty, art, ecology, and local cultural experience (Liu & Wu, 2014). For instance, Kuo et al. (2018) noted that there are luxurious B&Bs built as European-style royal castles standing atop local peaks in Nantou, Taiwan. As recently as 2019, the Taiwan Tourism Bureau (https://twstay.taiwan.net.tw/) divided and classified B&Bs into several types. These include mountain scenery, nature, food, family and experience, which are further evaluated based on cordiality, friendliness, cleanliness, sanitation, and safety requirements. Similar trends in Asia (e.g., China, Thailand and Japan) have recently developed, and thus issues relevant to the B&B industry are particularly interesting.

By adopting Saini et al.'s (2010) ideas about relative thinking and referent thinking in relation to different product prices and sales promotions, a number of management studies have developed a theoretical basis for discussing consumer online bidding (Liang & Chen, 2012; Nicolau, 2012). Overall, the main purpose of these studies was to design

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the online auction product mix based on tourism product price deviation level, sales promotion, and product characteristics in the real world (e.g., Jai, Burns, & King, 2013). The present study first aims to examine their influence on bidders' behavior as well as to help the tourism industry to develop appropriate marketing strategies. Next, field experiments were implemented to minimize possible deviations caused by either student or laboratory experiments (Hardesty & Suter, 2013; Homburg, Hoyer, & Koschate, 2005), which may provide a standard for future studies. Lastly, the present study aimed to identify the dynamics of the online auction bidding process, which is much closer to reality when shopping online. This is because it is not limited to a decision to either buy or not buy the item (e.g., Saini et al., 2010), as is seen in lab experiments. Therefore, different from Saini et al. (2010), this study set the bidding duration for a period of 3 days, during which the bidder could either continue to bid or resign from it. The bidders' reactions thus constitute continuous decision behavior.

Three field experiments were thus carried out for the current study to analyze the influence of relative and referent thinking in online tourism auctions on consumer bidding behavior (e.g., the end price) (as Appendix B). The three experiments are as follows: (1) 2 (the deviation level between product actual price and reference price: absent vs. present) × 2 (promotion program: price vs. non-price), (2) 2 (the deviation level between product actual price and reference price: moderate vs. extreme) × 2 (promotion program: price vs. non-price), (3) An extreme deviation between the product's actual price and reference price, 2 (product characteristics: normal travel vs. luxury travel) × 2 (promotion program: price vs. non-price).

2. Literature review

2.1. The effect of relative thinking and referent thinking

The value function from expectancy theory (Thaler, 1980) indicates that loss aversion is a convex curve, which implies that when compared to a bigger loss, consumers will be more sensitive to smaller losses when they are trying save money on a purchase. Tversky and Kahneman (1981) found that in order to save $5 their participants would travel 20 min to buy a $15 calculator, but would not travel the same distance for the same discount on a $125 calculator. As such, when it comes to saving money, people are attracted to lower priced items rather than higher priced ones (Azar, 2007; Thaler, 1980). Therefore, relative thinking represents how to differentiate the stimulus intensity of different products by measuring parts of the stimulus, and not its absolute quantity.

Gabor and Granger (1964) argued that consumer purchase decisions depend on changes in the relative price, and not the absolute price. The concept of relative price refers to the difference between the market and referent prices (Kamen & Toman, 1970). Kalwani, Yim, Rinne, and Sugita (1990) noted that attitudes to prices are formed through a comparison between the real price and an internal reference price. If the price is above the internal reference price, it is seen as a high price. But if it is below the internal reference price, it is seen as a low price. The referent thinking effect could thus be defined as a data point when consumers use it for the reference price. The idea that an internal reference price has a direct effect on consumer demand has been adopted by a number of researchers (Hardie, Johnson, & Fader, 1993; Monroe, 2003), with many insisting that different reference prices will increase the degree of price recognition among consumers, as well as the price recognition from any related sales promotions (Hardie et al., 1993; Kalyanaram & Winer, 1995). According to the diminishing sensitivity principle, the impacts of profit and loss on consumers will diminish along with their marginal value, which leads to an inconsistent S-shaped value function (Kahneman & Tversky, 1979; Tversky & Kahneman, 1991). In other words, the effects of a fixed dollar saving will decrease when the deviation between the real price and reference price increases (Liang & Chen, 2012).

To sum up, it is apparent that relative thinking and referent thinking have certain impacts on consumers' purchasing behavior in traditional brick-and-mortar markets (e.g., Saini et al., 2010). The authors of this study believe that relative thinking and referent thinking can be used to integrate sales promotion, product pricing, and product characteristics in online auctions. This allows for the design of different online auction mixes to examine their impact on bidding results.

2.2. Empirical research on internet auctions

An affiliated private value model has been used to analyze the effect of the reference price on seller's profit and buyer's bidding price in online auction contexts (Kagel, 1995; McAfee & McMillan, 1987). Researchers found that starting bid price and end price are positively related to each other (Kamins, Dreze, & Folkes, 2004; Suter & Hardesty, 2005). Suter and Hardesty (2005) investigated the number of bidders, starting bid price and seller's profit in an online auction sale of DVDs by controlling the auction sale time (length), shipment price, product quantity, seller's location, product name, product description and seller's evaluation as variables. The highest price could be obtained when there was neither a starting bidding price nor a retaining price. Lin et al. (2010) noted that the starting bid price, external reference price, auction product description, pictures, sale promotion and seller evaluation all impacted the end price. Moreover, product pictures provided buyers with accurate product information, which increased buyers' bidding intention and resulted in higher end prices. Hou and Blodgett (2010) found that several factors influenced the end price in online auctions. These include the seller's reputation, the seller's professional knowledge, starting bid price, retaining price, direct purchasing price, return policy and the buyer's professional knowledge.

2.3. Sales promotions

The American Marketing Association (AMA) regards sales promotions as short-term marketing activities to stimulate consumer purchase intentions, which in turn increase sales (Campbell & Diamond, 1990; Kotler, 2003). Chandon, Wansink, and Laurent (2000) divided sales promotions into monetary or non-monetary promotions according to product characteristics and consumption situation. Monetary promotions provide more utilitarian benefits, which consumers see as evidence of greater practical value being provided. Non-monetary promotions, on the other hand, provide hedonic benefits which consumers regard as the evidence of greater pleasure value being provided. Based on the study of Chandon et al. (2000), Hyun and Han (2012) demonstrated the positive effect of monetary and non-monetary promotion on innovativeness toward a chain restaurant brand. Kang, Tang, and Fiore (2015) collected 331 samples by email and examined the effect of monetary promotion on restaurant brand trust and active participation of consumers. Campbell and Diamond (1990) claimed that the use of integrated information technology increases value and reduces purchase cost. A promotion policy (price discount) that integrates information technology is seen by consumers as reducing the potential for losses. A promotion policy (e.g., a free gift with no price tag) that is difficult to integrate with information technology is regarded as providing greater individual value.

To sum up, this research agrees with the literature that sales promotions are short-term marketing activities which are designed to stimulate consumers' purchase intention in order to promote sales. Therefore, according to Chandon et al. (2000) and Campbell and Diamond (1990), marketing activities can be divided into two promotional policies: monetary (integrated with price information) and non-monetary (not integrated with price information).

2.4. Classification of product characteristics

The classification of tourism products first includes those products

aimed at different types of tourists. This refers to tailor-made items (e.g., free independent travel [FIT], business travel, and individual travel) and full service package tours (Yung, 1996). Secondly, it refers to tourist products for different types of services, which could be divided into either package tours with a tour leader and tour guide, or all-inclusive package tours (including transportation and accommodation). Thirdly, it refers to individual travelers (Yamamoto & Gill, 1999). Fourthly, it was suggested by Wang, Hsieh, and Huan (2000) that travel products could be separated into group package tours, foreign independent tours and independent travel. According to Beldona, Morrison and O'Leary (2005), travel products can be separated based on their complexity. Air tickets and reservations are a low complexity travel products, whereas individual travel and package tours are high complexity products.

The present study divides travel into normal and luxury travel by adopting product purposes, tourism industry characteristics and the richness of the travel program itinerary. The main reason for this is that practical and pleasurable travel purposes impact different elements of motivation and evaluation (Holbrook, 1986; Woods, 1960). On the one hand, normal travel provides travelers with opportunities to experience new things, which thus satisfies their hedonic and emotional needs. On the other hand, luxury travel provides not only pleasurable experiences, but also a social meaning. For example, luxury travel implies recognition of a higher social status and a more positive image, thus making it more attractive than normal travel.

3. Model

There were two methods that the present researchers adopted to set the assumption. One is to use the model index result from a formula or model of previous research (e.g., Lee, Choi, Yoo, & Oh, 2013; Santos & Giraldi, 2017) to develop the theoretical model. The other is to adopt the actual numbers, i.e., the governmental economic growth numbers and tourist numbers, as in Yang (2012). Based on the first method, the present study uses Saini et al.'s (2010) assumption as its model foundation. The present study extends the economic models of previous studies related to consumption utility (Koszegi & Rabin, 2006; Saini et al., 2010), which is considered to be associated with consumers' prospects for referent-thinking utility and relative-thinking utility. Through observing an individual consumer's expectations with regard to the two utilities, we attempt to derive a formula to explain the interaction effects within the essential variables of online auction behaviors. Accordingly, the magnitude of deviation between the starting bid (actual price) and reference price will decide an individual consumer's willingness to bid.

The present study is focused on online consumers' purchase decisions for a travel product which is assumed to have a given quality sold with different preferential programs, such as price discounts or premiums. We follow Saini et al.'s (2010) assumption that a customer's evaluation of the aggregate price of a tourism product with its preferential schemes is the key influence on his or her decision to participate in the online bidding process. The utility formula can be expressed as below:

$$u(p \mid p_r) = m(p) + v(p \mid p_r) \tag{1}$$

In Saini et al.'s formula, m(.) represents the consumption utility, whereas v(.) represents the reference utility, which is decided by the extent of deviation between the reference price and actual price (i.e., online bidding price). In Equation (1), p_r represents that a customer typically has an internal reference price, denoted by $p_r > 0$, when he/she is participating in an online auction. When the online bidding price p_a (actual price) is determined, denoted by $p_a > 0$, this could be either different from or equal to the internal reference price p_r. Therefore, the actual price is to be denoted as $p_a = p_r + |a|$, where "a" is designated as the deviation between the bidding price (actual price) and reference

price. If $a > 0$, this indicates that the customer's starting bid price is higher than his/her internal reference price (expected price). When p_a is higher than p_r, the customer will experience a feeling of loss. In contrast, if $a \leq 0$, it indicates that the customer's starting bid price is equal to or lower than his/her internal reference price (expected price). When p_a is lower than p_r, the customer will experience a feeling of gain. The total utility of a customer's online auction deal can be shown in Equation (2) and consists of the consumption utility of the starting bid price and the reference utility of the price deviation.

$$u(a, p_r) = m(p_a) + v(a) \tag{2}$$

The term $m(p_a)$ in Equation (2) is designated as the feature of the diminishing sensitivity of relative thinking, whereas the other term $v(a)$ represents the customer's referent-thinking feature based on the prospect[1] value function. The increase in $v(a)$ is strict, and a customer is loss-aversive and has diminishing sensitivity, which is dominated by his/her reference point (Kahneman & Tversky, 1979; Saini et al., 2010; Tversky & Kahneman 1991). Formula 3A, below, is used to indicate the functional relation of relative-thinking and referent-thinking utility.

$$m(p_a) = -(p_r + a)^\beta \tag{3A}$$

On the basis of Thaler's (1980) perspective, raising the price can be regarded as a disutility for the total value in a purchasing process. The term $0 <$ elation of relative-thinking and referentishing sensitivity to marginal utility.

$$v(a) = \begin{cases} |a|^\alpha & \text{for } a \leq 0 \ (p_a \leq p_r, \\ \textit{bidding price lower than expected price, experience gain.}) \\ -\lambda |a|^\beta & \text{for } a > 0 \ (p_a > p_r, \\ \textit{bidding price higher than expected price, experience loss.}) \end{cases} \tag{3B}$$

In addition, the term $0 < s \leq \beta$n addition, the term $0 <$ sing the price can be regarded as a disutility for the total value in a purchasing process. The term $0 <$ elation of relative-thinking and refth Thaler's (1980) prospect theory value function, relative thinking designates the expenditure on a product or service purchase as a loss term. Therefore, the total utility of a customer's online auction for a tourism product with an actual payment of p_a can be written as follows.

$$U_0(a, p_r) = \begin{cases} -(p_r - |a|)^\beta + (|a|)^\alpha & \text{for } a \leq 0 \ (p_a \leq p_r, \\ \text{bidding price lower than expected price, experience gain.}) \\ -(p_r + |a|)^\beta - \lambda |a|^\beta & \text{for } a > 0 \ (p_a > p_r, \\ \text{bidding price higher than expected price, experience loss.}) \end{cases} \tag{4}$$

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[1] In accordance with the perspective of indifference curve and consumer rationality, consumption utility (satisfaction) maintains the same level between different bundles of the same goods on a same indifference curve. Concerning psychological influences on choice behavior, the value function of prospect theory includes three elements: reference dependence, loss aversion, and diminishing sensitivity. Reference dependence indicates that people tend to naturally rely on an inner standard to make a judgment. In a process of consumption, people spontaneously use their inner standard to compare and evaluate the chosen product when making a purchasing decision. Referring to economics and decision theory, people normally prefer avoiding losses. As such, general customers are inclined to evaluate (calculate) an outcome of a purchasing behavior and try to avoid losses while acquiring gains. Diminishing sensitivity refers to the fact that people's tendency to face further increased losses or gains will become smaller. The psychological value of gains or losses will thus gradually decline along with the increase in quantity.

3.1. Research setting

This study proposes two alternative programs of product promotion for online bidders. Program A is a monetary promotion by giving a price discount, whereas program B is a non-monetary promotion giving a professional guiding service, which has the same value as the discounted money of program A. In program A, the discounted price can make online bidders feel they have saved money. In Equation (5), the magnitude of the money saved is denoted by x. In program B, the professional guiding service can make online bidders feel the quality of service has been upgraded or more value has been added to it. The strength of feeling that value has been added is thus denoted by g in Equation (6). The higher the value of "a", the greater the value of "g".

Program A: Utility of monetary promotion

$$U_{1x}(a, p_r, x) = \begin{cases} -(p_r - |a| - x)^\beta + (|a| + x)^\alpha \ for \ a \le 0 \quad (p_a \le p_r, \\ \text{experience gain.}) \\ -(p_r + |a| - x)^\beta \\ \qquad\qquad - \lambda \ (|a| - x)^\beta \ for \ a > 0 \\ \qquad\qquad (p_a > p_r, \text{experience loss.}) \end{cases} \quad (5)$$

Program B: Utility of non-monetary promotion

$$U_{1g}(a, p_r, g) = \begin{cases} -(p_r - |a|)^\beta + (|a|)^\alpha + g \qquad for \ a \\ \qquad \le 0 \ (p_a \le p_r, \ \text{experience loss.}) \\ -(p_r + |a|)^\beta - \lambda \ (|a|)^\beta \\ + g \qquad for \ a > 0 \ (p_a > p_r, \text{experience gain.}) \end{cases}$$
$$(6)$$

According to the previous assumption, the total utility of a customer's online auction deal consists of the consumption utility of the actual starting bid price and the reference utility of the price deviation. In this study, g is denoted as the extent to which an online bidder perceives the value added for the non-monetary gift of program B. Therefore, an online bidder chooses to bid on either program A or B, which depends on whether one of the following two conditions can be satisfied.

Condition 1: If This represents that the customer considers program B to be less valuable than program A. As such, he or she has more willingness to bid for program A than for program B.

Condition 2: If $g > \{x^\alpha + [-(p_r - x)\beta - (-(p_r))\beta]\}$ This represents that the customer considers program B to be more valuable than program A. Therefore, he or she has more willingness to bid for program B than for program A.

3.2. Case 1: bidding price has no deviation from the referent price

First, we follow Saini et al.'s (2010) procedure to set up a benchmark case in which the actual starting bid price is perceived to be the same as the reference price (point a_0 in Fig. 1). An online bidder considers the total utility, which consists of the consumption utility of the actual starting bid price and the reference utility of the price deviation. When the bidder is affected by relative thinking, he or she will bid for program A to gain the discount. The bidder will feel that using less than the market price to purchase the tourism product is more attractive than gaining the gift of program B. Therefore, condition 1: $g_1 \le \{x^\alpha + [-(p_r - x)\beta - (-(p_r))\beta]\}$ is satisfied. A consumer will have more willingness to bid for program A than to bid for program B. The related hypothesis is proposed below:

H1. When an online bidder perceives that the bidding price has no deviation from the reference price (i.e., a = 0 or a≒0), he or she is affected by relative-thinking. The bidder will then tend to purchase the product by bidding for program A with the feature of monetary promotion rather than program B with the feature of non-monetary promotion.

Figure 1. u(a, p_r)= m (p_a) + v (a)

Fig. 1. Referent point, loss-aversion and price diminishing sensitivity.

3.3. Case 2: bidding price has a deviation from the reference price

When the actual starting bid price is perceived as deviating from the reference price (point a_1 in Fig. 1), the bidder is affected more by referent thinking than by relative thinking when considering the total utility. He or she will prefer to bid for program B rather than to gain the discount of program A. Since program B provides a gift which is the same value as the money discount of program A, the bidder perceives the purchased product as being upgraded or value-added. Thus, condition 2: $g_2 > \{x^\alpha + [-(p_r - x)\beta - (-(p_r))\beta]\}$ is satisfied. A consumer will have more willingness to bid for program B than to bid for program A. The related hypothesis is as follows:

H2. When an online bidder perceives that the bidding price deviates from the reference price (a_1, x_1) and ($p_r - x$, $0 < x \le |a_1| = $,[2] he or she is affected by referent thinking. The bidder will then tend to purchase the product by bidding for program B with the feature of non-monetary promotion rather than program A with the feature of monetary promotion.
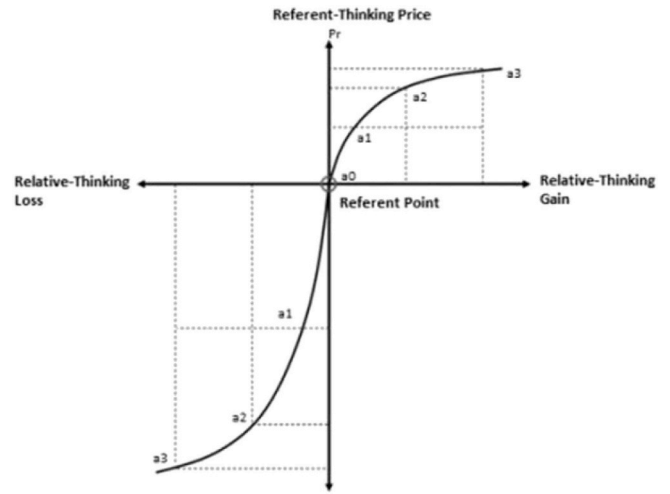
3.4. Case 3: bidding price has a moderate deviation from the reference price

When the actual starting bid price is perceived as having a moderate deviation from the reference price (point a_2 in Fig. 1), the bidder is still affected more by referent thinking than by relative thinking when considering the total utility. He or she will prefer to bid for program B rather than to gain the discount of program A. Since program B provides a gift which is the same value as the monetary discount of program A, the bidder perceives the purchased product being upgraded or value-added. Therefore, condition 2: $g_3 > \{x^\alpha + [-(p_r - x)\beta - (-(p_r))\beta]\}$ is satisfied. A consumer will have more willingness to bid for program B than to bid for program A. The related hypothesis is as follows:

H3. When an online bidder perceives that the actual starting bid price deviates moderately from the reference price (a_2, x_1) and ($p_r - x$, $0 < x$

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[2] When a consumer's actual starting bid price has a deviation from the reference price (i.e., $p_r - x > 0$, $0 < x \le |a|$), the utility function of purchasing this tourism product with scheme A or B can be:(7) Utility of monetary promotion of scheme A→ $U_A(a, p_r, x) =$
$-(p_r + |a| - x)^\beta - \lambda \ (|a| - x)^\beta$, for a> 0 ($p_a > p_r$, experience loss.)(8) Utility of non-monetary promotion of program B→ $U_B(a, p_r, g) = . -(p_r + |a|)^\beta - \lambda \ (|a|)^\beta + g$, for a> 0 ($p_a > p_r$, experience gain.)

$\leq |a_2|$), he or she is affected by referent thinking. The bidder will then prefer to purchase the product by bidding for program B with the feature of non-monetary promotion than program A with the feature of monetary promotion.

3.5. Case 4: bidding price has an extreme deviation from the reference price

When the actual starting bid price is perceived as having an extreme deviation from the reference price (point of a_3 in Fig. 1) and (p_r –x, 0 < x $\leq |a_3|$), the bidder is still affected much more by relative thinking than by referent thinking when considering the total utility. The bidder will feel that a price for the tourism product that is much lower than the market price is more attractive than the gift of program B. Thus, condition 1: $g_4 \leq \{x^\alpha + [-(p_r - x)\beta - (- (p_r))\beta]\}$ is satisfied. A consumer will have more willingness to bid for program A than for program B. The related hypothesis is as follows:

H4. When an online bidder perceives that the actual starting bid price deviates extremely from the reference price (a_2, x_1) and (p_r –x, 0 < x $\leq |a_3|$), he or she is significantly affected by relative thinking. The bidder would then prefer to purchase the product by bidding for program A with the feature of monetary promotion than for program B with the feature of non-monetary promotion.

3.6. Case 5: bidding price is extremely deviated from the reference price when purchasing normal goods

In the principles of economics, the consumer price and quantity of normal goods are in line with the law of supply and demand. Therefore, ordinary people dislike too high or too low purchase prices because of the high deviation between the personal expected price (reference price) and bidding (actual) price. Therefore, the greater the deviation between a consumer's starting bid (actual) price and reference (expected) price, the more the customers perceive a possible risk. According to the risk aversion perspective, people care about losses much more than gains, even when the losses and gains are the same value. For instance, a loss of $30 would be perceived as having more impact than a gain of $30. On the basis of risk aversion, a common mental phenomenon, condition 1: $g_5 \leq \{x^\alpha + [-(p_r - x)\beta - (-(p_r))\beta]\}$ is satisfied. The bidder is affected much more by relative thinking when considering the total utility. And in this scenario, the bidder prefers to use a price that is much lower than the market price to purchase the tourism product rather than to gain the gift of program B. Therefore, a consumer will have more willingness to bid for program A than to bid for program B. The related hypothesis is as follows:

H5. When purchasing normal tourism goods (conspicuous goods excluded), and when an online bidder perceives the actual starting bid price to be extremely deviated from his or her reference price, he or she is significantly affected by relative thinking. The bidder would then prefer to purchase the normal goods by bidding for program A with the feature of monetary promotion rather than purchasing program B with the feature of non-monetary promotion.[3]

3.7. Case 6: bidding price is extremely deviated from the reference price when purchasing conspicuous goods

A specific social class of consumers is inclined to spend money buying luxury goods, services and some leisure activities to show off their wealth or social status. Since they are less concerned about the price, these consumers tend to purchase luxury items that have such characteristics as being new, of high quality, of limited quantity, or having unique designs. They are thus less affected by relative thinking. Since program B provides a gift that is the same value as the discount of program A, the bidder would perceive program B to be highly upgraded or value-added because of the high deviation between the reference price and bidding price. Therefore, condition 2: $g_6 > \{x^\alpha + [-(p_r - x)\beta - (- (p_r))\beta]\}$ is satisfied. A consumer will have more willingness to bid for program B than to bid for program A, and the related hypothesis is as follows:

H6. When an online bidder perceives that the actual starting bid price of conspicuous goods[4] deviates extremely from the reference price, he or she is not affected by relative thinking. The bidder would then prefer to purchase the product by bidding for program B with the feature of non-monetary promotion than bidding for program A with the feature of monetary promotion.

4. Study 1

4.1. Experimental materials design

The present researchers chose to work closely with bed and breakfast (B&B) accommodation owners from Kenting, Taiwan since they provide complete package tour programs. The design ideas for price deviations and promotion policies originated from the online travel section of International Travel Fair (ITF),[5] 2014. Saini et al.'s (2010) experimental method was used as a reference to design the degree of price deviation in which the present researchers changed the sales promotion from free gifts to a promotion policy in order to differentiate monetary program A from non-monetary program B. In a similar approach, research on information technology management (e.g., Liang & Chen, 2012) has used different sales items but similar sales price promotion policies to control sales promotions.

Based on Campbell and Diamond (1990), the authors divided the sales promotions of the Taipei 2014 ITF from 268 promotional messages into monetary program A and non-monetary program B. Scheme A is a monetary promotion giving a price discount, whereas scheme B is a non-monetary promotion giving a local guided tour that has the same value as the discounted money of scheme A. Two test groups were used. One was a group of B&B owners from Kenting, Taiwan and the other was a group of 20 students who had previously stayed in B&B accommodation in Kenting within the last three months. The content of the test questions consisted mainly of different travel packages, itineraries and prices, which included activities such as water sports, paintball games, theme park tickets, free shuttle buses and free travel

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[3] This study compared the responses of participants when under different conditions (e.g., starting bid price: high vs. low; and sales promotion type: monetary vs. non-monetary), and thus to address the concerns of the reviewer, the setting of the model formula will not compromise the quality of a specific product in given and fixed quality.

[4] HYPERLINK "https://en.wikipedia.org/wiki/Economics" \o "Economics"Economists and sociologists use the term *conspicuous goods* to refer to certain commodities, especially expensive goods which are purchased by the rich to display their wealth and social status (an idea first noted by Thorstein Veblen in 1857). The behavior of spending much money on luxury goods or in the practice of certain activities is termed conspicuous consumption. The market mechanism of conspicuous goods breaks the law of supply and demand, because the relationship between the price and demand is positive.

[5] ITF was established by the Taiwan Visitors Association in 2011. The association includes tourism bureau officials and industrial sectors. There are over 1500 business units and more than 330,000 visitors who participate in the fair every year. The promotion was the extra incentives provided to the original products for added value. It was found that most of the tourism product promotional messages shown on the ITF website in 2014 were those products that were selling at a price lower than the market price with the discount promotion ads taking up 38% of the website. This research set the scenario in the price deviation environment from the consumers point of view, i.e., the starting bid price was lower than the market price (when a $\leq$, it presents pa $\leq$ pr).

information inquiries. The results suggest that from the B&B accommodation owners' points of view, water sports and local guided tours of the Kenting area were the most popular travel packages for their guests. The selling prices of these were both around NT$500. As for the 20 students, they chose from program A, the water sports discount, which is the monetary promotion program, and program B, the local guided tour, which is the non-monetary promotion program (as Appendix C). The authors applied these findings to the design of the sales promotion used in this study.

The present study is aimed at the degree of price deviation when the starting bid price is lower than the market price (i.e., when $a \leq 0$, shows $p_a \leq p_r$), and the products' starting bid prices are lower than the reference prices. This was confirmed through the online travel promotion messages from the 2014 Taipei ITF. The present research employed similar face-to-face interview methods as those used by Saini et al. (2010) and Grewal, Monroe, and Krishnan (1998), as well as a mathematical formula form Chang, Chou, and Chang (2006) to design a starting bid price. The results indicate that a reasonable price is the average of the daily room rate and highest daily rate, which is NT$3800 per night (daily rate formula: NT$3300 + weekend rate NT$4300). In addition, it is noted that the discount range was between 40%–70% (in 55% of sales messages) and that full board with a sightseeing package was widely promoted at the 2014 Taipei ITF. Most of the interviewed students (65%) suggested that a reasonable starting bid price should be 70% of the B&B daily room rate, which was NT$2660. A total of 55% of all the interviewees, both students and B&B owners, suggested that the starting bid price should be 60% of the reasonable B&B daily room rate. Moreover, the B&B owners suggested that the room rate should be adjusted to NT$2310.

4.2. Experimental process design

The present research chose Yahoo Taiwan for the field experiment, since it has an enormous online auction site with a sound bidding and auction system. It is also the most popular online company in Taiwan. Meanwhile, some of the control variable settings[6] were designed based on previous online auction research (e.g., Hou & Blodgett, 2010; Kamins et al., 2004; Suter & Hardesty, 2005). As for the experimental online content, the information on the front page of the auction sale showed the starting bid price (NT$2310 vs. NT$2660) and reference price (normal B&B auction sale price with a 30% discount) for which the outcomes were determined in relation to there being deviation ($a > 0$) between the actual product price P_a and reference price P_r. If there was no deviation, the starting bid price would be equal to the reference price ($P_a = P_r$). If there was a deviation, the starting price would be lower than the reference price ($P_a < P_r$). A promotional policy was thusly set for program A and program B. The authors employed wording descriptions and pictures to introduce the room types and characteristics of the B&B accommodation in order to attract potential visitors to the tourism location. At the same time, the participants were unaware that they were involved in an academic field experiment. This was designed to avoid sampling deviation. Because respondents were unaware that they were actually participating in an academic research experiment, the end price chosen by the participants constitutes their real intention for bidding.[7] When bidding was finished,

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[6] (1) auction duration: three days; (2) product name: flash sale of Kenting featuring B&B accommodation with tours (actual sale price NT$3800 and auction sale price is 30% off); (3) product quantity: one piece; (4) product description: detailed description with additional travel packages and photos; (5) transportation charge: NT$25; (6) inquiries (Q&A): online inquiries and telephone inquiries; (7) remittance account: provide account number; (8) market price: provide current Kenting package tour market price; (9) area reviews: Kenting, good review (Yahoo review system: grade 8, diamond rating); and (10) no direct purchase price.

[7] When respondents joined the B&B bidding process, they believed that they

the author emailed the bidders and informed them that what they had done was actually an academic experiment. In the email, the author also invited bidders to sign the agreement and participate in the questionnaire for the purpose of ensuring the correctness of the experimental design. The author also provided an NT$100 voucher for their participation to thank them for their support. In total, there were 140 tests and 498 valid samples (as shown in Table 2).

4.3. Measurement development

The variables were from the scales widely adopted and validated in marketing research (e.g., Saini et al., 2010; Suter & Hardesty, 2005). A pilot test (five respondents) was carried out by the present authors, and the questionnaire was then modified based on the results of this. The questionnaire included items on: (1) product price: auction starting bid price (NT$2660 vs. NT$2310); the highest bidding price (end bidding price); degree of deviation of starting bid price and reference sales price (the deviation of actual product price and reference price), with reference to Saini et al. (2010). (2) Sales promotion: B&B owners provided monetary program A and non-monetary program B to consumers as part of their online communication activities (e.g., direct mail) to boost buying intentions (Chandon et al., 2000; Kotler, 2003). (3) Demographics: occupancy, work experience, education, internet experience, gender, income, age, marital status, and internet use hours per day. (4) Manipulated variables: (A) Do you think the starting bid price (Pa) is too low?; (B) Do you think there is a difference between product market price and reference price (Pr)?; (C) What type of sales promotion (monetary vs. non-monetary) do you think you chose this time? The above three questions were thusly asked in this section (Grewal et al., 1998; Liang & Chen, 2012; Suter & Hardesty, 2005).

4.4. Statistical results

4.4.1. Manipulation check

Chi-square analysis (Table 1) showed that for most of the participants (67% vs. 54%) the cognitive and manipulated sales promotions were similar ($\chi^2 = 20.67$, $p < .001$).[8] The results indicate that consumers are aware of the difference in promotion between monetary and non-monetary policy. Meanwhile, the starting bid price is obviously lower in the deviation ($a > 0$) than in the non-deviation condition (i.e., $a = 0$ or $a \doteq 0$; $t = 1.968$, $p < .05$). A similar situation applies to the price deviations ($t = 2.080$, $p < .05$), which means that the variables in experiment one were successfully manipulated and can therefore be used in the hypotheses testing.

4.4.2. Hypothesis testing

An interaction existed between price deviation (a) and promotion programs A and B ($F = 5.03$, $p < .05$) (as shown in Table 2 and Fig. 2). This research took independent *t*-test analysis to test the simple main

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(footnote continued)
were engaged in an actual bidding situation and did not know that they were participating in an academic experiment. The participants were informed that they were in fact involved in a field experiment after they had finished the bidding and had received e-mail information telling them so. They were also asked to sign the agreement to participate in the experiment in the email. The researchers also informed respondents that they could still purchase the B&B coupons with end price they had bid on in their experiment if they wanted. Of course, this sampling method may increase the bias of self-selection (Koch and Emrey, 2001). Strauss (1996) suggested that mass data collection could reduce sample deviation. Sánchez-Franco and Martin-Velicia (2011) discuss a similar concept. Therefore, it is fair to suggest that the 400–500 samples collected for this study were sufficient to reduce self-selection.

[8] Cognitive promotions refer to the promotion type recognized by a consumer through website promotion. On the other hand, manipulated sales promotions are the promotions that we designed for the research purpose.

Table 1a

Manipulation results of study one- χ^2 result.

Cognitive promotions manipulated sales promotions	Program A	Program B	Total number	χ^2_{df} (p)
	N (%)	N (%)		
Program A	161(67%)	81(33%)	242	20.670_1(.000)
Program B	117(46%)	136(54%)	253	

Table 1b

Manipulation results of study one - t-test result.

Price deviation level that controlled by experiment(a)		Mean (SD)	t (p)
Manipulating starting bid price	a > 0 (244)	4.2623(2.274)	1.968_{482}(.050)
	a = 0 or a≒0 (240)	3.8458(2.379)	
Manipulating deviation level	a > 0 (245)	4.6653(2.3087)	2.080_{489}(.035)
	a = 0 or a≒0 (246)	4.2058(2.5419)	

3/14/7 missing data in sale promotion/manipulation starting bid price/manipulation price deviation level.

Present means: a > 0, customer's starting bid price is higher than his/her internal reference price, and customer would experience a feeling of loss.

Absent means: a ≤ 0, customer's starting bid price is equal to or lower than his/her internal reference price, and customer would experience a feeling of gain.

effect. The simple main effect findings show that when the starting bid price deviates (a > 0), the messages provided by program B are more popular among consumers than those provided by program A (referent thinking effect). The referent thinking effect suggests that savings in a high price situation are more attractive than in a low price situation because factor g (free gift upgrade) is greater than the loss in program B. If the starting bid price is without deviation (a ≤ 0), consumers prefer sales promotion messages from monetary program A and are willing to pay a higher bidding price (due to the relative thinking effect). As Azar (2007) and Saini et al. (2010) suggested, when the actual product price P_a and reference price P_r have a deviation (a > 0), in order to avoid losses consumers will prefer buying high price products with a free gift promotion, as in as program B. H1 and H2 are thus supported.

4.4.3. Discussion

Compared with gains (i.e., the start bidding price is lower than the reference price), a promotion program with monetary characteristics is considered more attractive when losses occur (i.e., the starting bid price equal to the reference price). That is the so-called referent effect. In contrast, when the starting bid price equals the referent price, there are no gains, and thus consumers will pay more attention to promotion programs with price characteristics. This is the so-called relative effect. As noted in Liang and Chen (2012), under what circumstances and sales promotion are decisions made by consumers influenced by either the relative effect or referent effect? Consumers do not exercise the relative thinking effect when buying products but are affected by the reference point.

Table 2b

Simple main effect results of hypothesis one and two.

Price deviation level	Sale promotion	Mean	SD	t_{df} (p)
a > 0	Program A	2460.28	704.21	-5.712_{68} (.000)
	Program B	3337.14	573.47	
a = 0 or a≒0	Program A	3212.57	598.88	2.452_{68} (.017)
	Program B	2828.00	708.95	
Sale promotion	Price deviation level	Mean	SD	t_{df} (p)
Program A	a > 0	2460.28	704.21	-3.303_{68} (.002)
	a = 0 or a≒0	3212.57	598.88	
Program A	a > 0	3337.14	573.47	4.814_{68} (.000)
	a = 0 or a≒0	2828.00	708.95	

Participants in study one (sample sizes for four field experiment were 35): present + program A = 127 respondents; present + program B = 123 respondents; absent + program A = 121 respondents; absent + program B = 127 respondents. There were 140 tests and 498 valid samples.
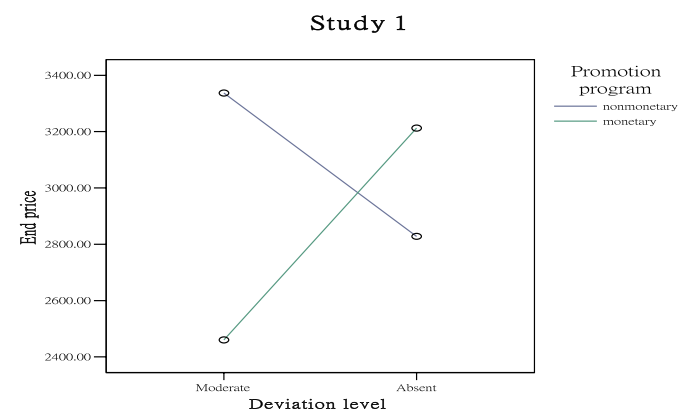

Fig. 2. Interaction effect of study one.

This finding has important implications in both academic marketing research and practice. Since B&B accommodations have different market positions (e.g., beautiful spaces vs. cheap prices), the price setting strategy will be different for online auction sales (e.g. different discounts will be provided). Therefore, we suggest that if B&B owners are not willing to offer discounts on room rates, consumers will then consider it as a loss. In light of this and based on relative thinking, it will be more attractive to consumers if they are given a monetary discount. In contrast, if a discount is offered on a room rate or at the same time professional services are offered for free (e.g., room service, professional travel inquiries) then this will attract more consumers as a result of referent thinking. These findings could help accommodation owners to reduce costs and increase profits. On the other hand, relative or referent thinking could also help owners to set up better online auction price strategies and design better promotion programs. In addition, how far will relative or referent thinking be reflected in actual buying behavior? As the research model shows, we need to consider the deviation between the real price and reference price, and also how to

Table 2a

Two-way ANOVA results of hypothesis one and two.

Deviation level(a)	Sale promotions (N)	Mean	SD	Source	Type III sum of squares (df)	F (p)
(a > 0,p_a > p)	Program A(35)	2460.28	704.21	Intercept	1226209635.0(1)	2909.1(.000)
	Program B(35)	3337.14	573.47	C:price deviation level	517286.4(1)	1.227(.270)
(a ≤ 0,p_a ≤ p_r)	Program A(35)	3212.57	598.88	D: sale promotion	212520.7(1)	5.031(.027)
	Program B(35)	2828.00	708.95	C × D	13923017.8(1)	33.031(.000)
				Error	57326040.0(136)	

categorize and design travel products.

5. Study 2

5.1. Experiment materials design

The settings of the control variables and sales promotions in the field experiment are the same as in study 1. With regard to the deviation of actual product price and reference price, the researchers adopted a face-to-face interview method and asked 20 students who had stayed in B&B accommodation in the last three months. When a reasonable room rate was reached at NT$3800 (the calculation of the formula is from Chang et al. (2006), most of the student-respondents (> 70%) stated that a moderate deviation should be NT$2310 (60% of the reasonable room rate). Respondents further stated that extreme deviation would be NT$1140 (30% of reasonable room rate, which is also the pricing strategy adopted by the tourism industry).

5.2. Experimental process design

For the experimental online content, the front page of auction sale showed that the starting bid price (NT$2310 vs. NT$1140) and reference price (30% off the general B&B room rate), were in line with the actual product price and reference price deviation (moderate deviation a_2 represents 60% of the starting bid price; extreme deviation a_3 represents 30% of the reference price). Email questionnaires were sent to the consumers after the online auction sales, and they received a free gift worthNT$100 for participating. There were 138 tests and 501 valid samples in total (as shown in Table 4).

5.3. Measurement development

The research variables used here are the same as those used in study one, and include the product price, sales promotion, demographic statistics and manipulated variables.

5.4. Statistical results

5.4.1. Manipulation check

This study adopted chi-square test to analyze the difference between consumers' perception of monetary and non-monetary sales promotion, with an χ2 result of 51.45. This indicates that consumers in the experiment believed that a monetary sales promotion was different compared with a non-monetary sales promotion. A *t*-test was used to test the consistency between consumers' perception of the starting bid price and the manipulated starting bid price. There was consistency between consumers' perception of the level of deviation and the manipulated level of deviation. The *t*-test results indicate that the starting bid price is higher in a high starting bid price situation compared with a low starting bid price situation (t = − 2.306, p < .05). Meanwhile, consumers believe that the level of price deviation is obviously higher in the extreme deviation than in the moderate deviation (t = − 2.395, p < .05) Table 3.

5.4.2. Hypothesis testing

The results of two-way ANOVA analysis show that an interaction exists between the price deviation and promotion program (F = 44.116, p < .001) (as shown in Fig. 3). This research took independent *t*-test analysis to test the simple main effect. The simple main effects (Table 4) show that due to the referent thinking effect there is moderate price deviation as a_2 indicates (the start bidding price is 60% of the reasonable price). The messages provided by the non-monetary program are more popular among consumers, and thus they are more willing to bid a higher price for this. However, when the starting bid price is an extreme deviation a_3 (the starting bid price is 30% of the reasonable price), consumers prefer messages from the monetary promotion, and are therefore more willing to pay a higher bidding price. As Kalyanaram and Winer (1995) suggested, consumers have stronger reactions if the price increase (loss) is above the reference point when compared to a price decrease (profit) under the reference point.

5.4.3. Discussion

According to expectancy theory's diminishing sensitivity principle (Kahneman & Tversky, 1979), if the actual product price and reference price have a moderate deviation a_2, then the fixed price saving effect diminishes when the real price increases for consumers. Therefore, we assume that if the price is at its extreme deviation a_3, then consumers will not be affected by relative thinking when the price is moderately deviated, but are more interested in non-monetary sales promotions (due to the reference effect), and are also more pleased with a higher closing bid price. In contrast, according to the inconsistent S-shaped value function (Kahneman & Tversky, 1979), relative thinking will boost the success of low price sales promotions (Campbell & Diamond, 1990) to make up losses. If the starting bid price is inclined to moderate deviation, then the non-monetary promotion policy should be enhanced, e.g., professional services should be offered. Conversely, if the starting bid price is inclined to extreme deviation, then the monetary promotion policy should be enhanced, e.g., a discount. In the next

Table 3
Manipulation results of study two.

Cognitive promotions Manipulated sales promotions	Program A N(%)	Program B N(%)	Total number	$\chi^2_{df}(p)$
Program A	185(76%)	59(24%)	244	$51.452_1(.000)$
Program B	113(44%)	142(56%)	255	

Price deviation level that controlled by experiment(a)			Mean (SD)	t $_{df}$ (p)
Manipulating starting bid price	$a = a_2(246)$		5.7073(1.684)	$-2.306,_{487}$ (.022)
	$a = a_3(243)$		6.0370(1.469)	
Manipulating deviation level	$a = a_2(249)$		5.4498(2.6317)	$-2.395,_{494}$ (.017)
	$a = a_3(247)$		5.9960(2.4436)	

2/11/6 missing data in sale promotion/manipulation starting bid price/manipulation price deviation level.

Moderate deviation means: when a > 0, and $p_a > p_r$. Customer's starting bid price is higher than his/her internal reference price, and customer would experience a feeling of loss.

Extreme deviation means: when a ≤ 0, and $p_a \leq p_r$. Customer's starting bid price is equal to or lower than his/her internal reference price, and customer would experience a feeling of gain.
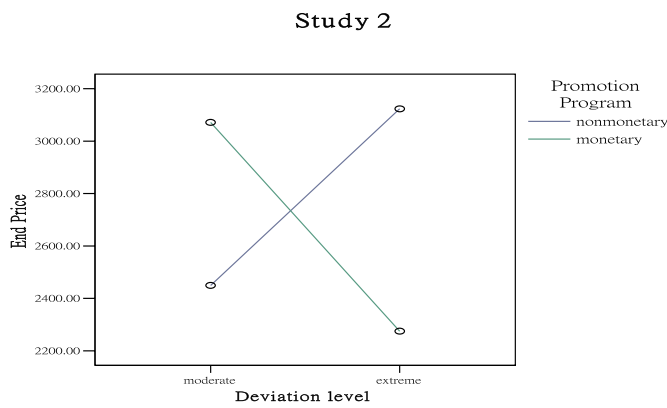
Study 2

Fig. 3. Interaction effect of study two.

study, we consider if the travel product's characteristics will affect the bidding results with regard to relative or referent thinking.

6. Study 3

6.1. Experiment design

Travel product characteristics can be categorized according to Beldona, Morrison, and O'Leary (2005) and Yamamoto and Gill (1999), and also modified based on existing Kenting tourist itineraries. Based on the travel product characteristics (accommodation, transportation, and travel activities), the authors divided these into normal and luxury travel. In addition, Ryan and Stewart (2009) indicated that luxury accommodation should possess unique scenery, butler service, high price, special culture and traditional experience. Therefore, the present study will include these characters in the instructions manual (as detailed in Appendix C). Normal travel presents standard accommodation and recreation plans, while luxury travel emphasizes high quality accommodation, recreation plans and luxurious activities. Ten senior

managers each with 3–5 years of work experience were interviewed via face-to-face to probe their understanding of normal and luxurious travel schemes. The interview questions included items on spaces, services and gourmet food, which resulted in five different variances for these two types of travel. The results were then transformed into online commercial content by the researchers. The five types were (1) room spaces vs. luxury room spaces, (2) supreme private garden yard vs. private garden yard, (3) 24-h Kenting travel information vs. free Kenting travel information, (4) in-depth Kenting culture and professional tour vs. professional Kenting tour, and (5) gourmet local breakfast vs. free breakfast. As for the degree of deviation between actual product price and reference price, this study adopted the extreme deviation from experiment two, which is NT\$1140.

6.2. Experimental process design

The control variables were set the same as in study one. For the experimental online content, the front page of the auction sale showed a starting bid price of NT\$1,140, and sales promotions were set for monetary and non-monetary offers. Email questionnaires were sent to the consumers after the online auction sales, and respondents received a free gift worth NT\$100. There were 131 tests and 522 valid samples in total (as shown in Table 6).

6.3. Measurement

The research variables used here were the same as in study one, and included product price, sales promotion, demographic statistics and manipulated variables. The items for the travel program were based on Liang and Chen (2012).

6.4. Statistical results

6.4.1. Manipulation check
The results of the Chi-square analysis (in Table 5) show that for most of the respondents (68% vs. 60%) the cognitive and manipulated

Table 4a
Two-way ANOVA results of hypothesis three and four.

Deviation level(a)	Sale promotions (N)	Mean	SD	Source	Type III sum of squares (df)	F (p)
a = a_2	Program A (35)	2449.41	630.91	Intercept	1028138579.1(1)	2431.9(.000)
	Program B (34)	3071.42	718.48	C: price deviation	129304.1(1)	.306(.581)
a = a_3	Program A (35)	3123.52	724.91	D: salepromotion	442996.5(1)	1.048(.308)
	Program B (34)	2274.85	503.64	C×D	18651321.5(1)	44.116(.000)
				Error	56652267.5(134)	

Table 4b
Simple main effect results of hypothesis three and four.

	Sale promotion	Mean	SD	t_{df} (p)
a = a_2	Program A	2449.41	630.91	−3.817 $_{67}$ (.000)
	Program B	3071.42	718.48	
a = a_3	Program A	3123.52	724.91	5.661 $_{67}$ (.000)
	Program B	2274.85	503.64	

Sale promotion	Deviation level	Mean	SD	t_{df} (p)
Program A	a = a_2	2449.41	630.91	−5.371 $_{66}$ (.000)
	a = a_3	3123.52	724.91	
Program A	a = a_2	3071.42	718.48	4.090 $_{66}$ (.000)
	a = a_3	2274.85	503.64	

Participants in study two (sample sizes range for four field experiment were 34–35): moderate deviation + program A = 128 respondents; moderate deviation + program B = 123 respondents; extreme deviation + program A = 123 respondents; extreme deviation + program B = 127 respondents.

Table 5
Manipulation results of study three.

Cognitive promotions Manipulated sales promotions	Program A N(%)	Program B N(%)	total	χ^2_{df} (p)
Program A	152(68%)	70(32%)	222	42.48_1(.000)
Program B	118(40%)	180(60%)	298	
Respondents' cognition with regard to travel type	Normal	Luxury	total	χ^2_{df} (p)
Controlling travel type	N(%)	N(%)		
Normal	281(94.0%)	18(6.0%)	299	352.88_1 (.000)
Luxury	27(12.%)	195(87.8%)	222	

Travel type that controlled by experiment(a)		Mean(SD)	t_{df} (p)
a = a₅ a₆	Normal (273)	5.5861(2.5089)	$-1.805_{,517}$ (.072)
	Luxury (246)	5.9919(2.6108)	

2/3/1 missing data in sale promotion/manipulation starting bid price/manipulation price deviation level.

sales promotion (χ^2 = 42.48, p < .001) and cognitive and manipulated travel itinerary were similar (χ^2 = 352.88, p < .001). Moreover, the price deviations were the same both for normal and luxury itineraries (t = −1.81, p > .05). The control valuables in experiment three were thus successfully manipulated and can therefore be used for hypotheses testing.

6.4.2. Hypothesis testing

The end price will be influenced by the interaction of travel type and sales promotion (F = 42.460, p < .001) (as shown in Tables 6a and 6b and Fig. 4), and thus simple main effect analysis is needed. Under the normal travel scheme, if the starting bid price and reference price have an obvious deviation, then the relative thinking effect will attract consumers to pay more attention to monetary sales messages than non-monetary ones, thus resulting a higher end price. However, if luxury travel characteristics are emphasized and at the same time there are obvious differences between the reference price and starting bid price, consumers will pay more attention to luxurious products to show off their wealth and gain status. Therefore, non-monetary sales messages will have more impact than monetary ones, and so a higher end price is required. As Micu and Chowdhury (2010) suggested, if travel products are only for pleasure, then consumers will change their buying motivations and seek products with more attraction and excitement.

6.5. Discussion

The present study finds that if there is an extreme deviation between the reference price and actual price, then the referent thinking effect may dominate bidding decisions when considering product characteristics. Therefore, B&B owners need to understand different product characteristics, so that they can be promoted better online or be redesigned to attract more guests. For example, hedonic and utilitarian products (Micu & Chowdhury, 2010) will bring consumers different perceptions and value. Travelers consider that luxury products can help them to both show off their personal taste and maintain high social status (Chan, Wan, & Sin, 2007), thus reversing the relative thinking effect. That is to say that when there is an extreme deviation between the actual and referent prices, as a₆ indicates, the referent thinking effect will dominate buying decisions. Consumers under such

Table 6b
Simple main effect results of hypothesis five and six.

Travel type	Sale promotion	Mean	SD	t_{df} (p)
Normal	Program A	3376.00	538.73	5.165_{59} (.000)
	Program B	2475.00	746.94	
Luxury	Program A	2563.14	606.06	-3.859_{68} (.000)
	Program B	3098.85	554.17	
Sale promotion	Travel type	Mean	SD	t_{df} (p)
Program A	Normal	3376.00	538.73	5.165_{59} (.000)
	Luxury	2563.14	606.06	
Sale promotion	Normal	2475.00	746.94	-3.859_{68} (.000)
	Luxury	3098.85	554.17	

Participants in study three (sample sizes range for four field experiment were 25–36): normal travel + program A = 98 respondents; moderate deviation + program B = 172 respondents; luxury travel + program A = 126 respondents; luxury travel + program B = 126 respondents.
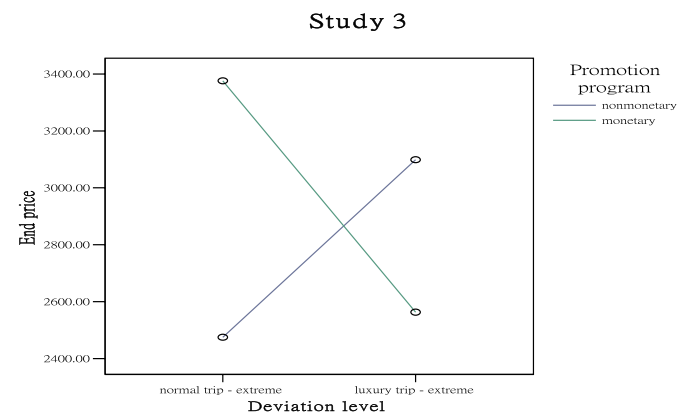
Fig. 4. Interaction effect of study three.

Table 6a
Two-way ANOVA results of hypothesis five and six.

Travel type	Sale promotion (N)	Mean	SD	Source	Type III sum of squares (df)	F (p)
Normal	Program A (25)	3376.00	538.73	Intercept	1061067045.4(1)	2726.563(.000)
	Program B (36)	22475.00	746.94	C: travel type	285949.5(1)	.735(.393)
Luxury	Program A (35)	2563.14	606.06	D: sale promotion	1068147.4(1)	2.745(.100)
	Program B (35)	3098.85	554.17	C×D	16523674.7(1)	42.460(.000)
				Error	49423208.5(127)	

circumstances will make purchases at a higher price for luxury travel packages with free gift promotions.

7. Conclusions and future suggestions

7.1. Conclusions

This study confirmed that relative and referent thinking effects can both be used in online auction sales for B&B accommodation. Firstly, for the theoretical implications, the authors used an existing online auction sales website as an experimental environment that could not only enhance the effectiveness of field experiments in the hospitality industry (Grissemann & Stokburger-Sauer, 2012), but also help to better understand the bidding behavior in relation to B&B accommodation in online auctions. This is in accordance with the suggestion from Suter and Hardesty (2005) that such research should examine different products. The present researchers also used various sales promotion tools, not merely free gifts (Saini et al., 2010), to extend the sales promotion territory covered by this work. In practice, business owners incorporate various sales tools (e.g., free gifts and coupons) in order to attract consumers. Secondly, Saini et al. (2010) used binary logistic regression analysis to evaluate the buying intentions of consumers, but did not mention the process of decision making (i.e., how many bids and how much?). From the present authors' point of view, the end price is a variable which represents the final outcome of the bidding process. The results of this study serve not only to understand if people will make a purchase, but also the different bidding results for consumers under different experimental simulations. Thirdly, this research investigates extreme deviation between the actual product price and reference price and whether or not different product characteristics (e.g. normal or luxurious) will make the referent thinking effect dominate bidding decisions. In that sense, a number of potential variables (e.g., profit gains or losses) should be taken into consideration in future research on the effects of relative and referent thinking. Fourthly, this research finds that consumers prefer non-monetary sales promotions to those with a price discount when in a low starting bid price situation. Similar to Saini et al. (2010), the relative thinking effect applies when the product price is the same as the expected price. In contrast, the relative thinking effect does not apply when there is a deviation between the product price and expected price. The authors of this research did not merely replicate the research of Saini et al. (2010); rather, it was found that the online starting bid price of B&B accommodation products affects the associated buying intention. At the same time, this study also explained when and why the same sales promotion will result in a lower starting bid price situation and a higher starting bid price situation.

The present study offers a practical online price-setting strategy for B&B owners. Some owners maintain the original price and insist on providing professional and friendly services to attract tourists' attention, while others prefer to reduce prices to attract more tourists. However, the present study's findings indicate that consumers either have a reference price in mind, or that business owners already provide hints for a reference price. In order to maintain the original set price, it is better to provide sales promotions with price information to attract

consumers to make a bid. Consequently, if the deviation between the reference price and actual price gets bigger, the relative thinking effect will cause consumers to search for a low-priced sales promotion (Campbell & Diamond, 1990). In that case, a sales promotion with price information should be provided, such as a discount. Finally, it is suggested that if B&B owners want to develop different travel programs, or if travel programs are based on the owners' personal tastes or personal reputation (Chan et al., 2007), then providing a non-monetary promotion policy is more applicable. This is particularly the case if such programs make consumers feel different (e.g. luxury bathroom amenities or lavish bedroom space), since the referent thinking effect will reverse the relative thinking effect.

7.2. Limitations and future suggestions

This work has the following limitations. (1) Product types: The experimental products for this research are based on B&B accommodation, and there are many other different types of travel products that could be examined in future research. For example, package travel tours, air tickets, or other products (Liang & Chen, 2012). In addition, on any given online auction website, sellers may provide different types of products for bidders to bid on, which may influence bidders' ultimate intentions with regard to what bidders are shopping for. In light of this, it is suggested that future research consider the moderating effect of different bidding products on bidders' intention for auction products. (2) Sales promotions: Chandon et al. (2000) and Campbell and Diamond (1990) suggested dividing sales promotions into two types, monetary and non-monetary. However, there are other was of dividing them. For example, Kotler (2003) classified sales tools into thirteen different types (e.g., sample or product guarantee). Therefore, it is suggested that future research could focus on the analysis and comparison of different types of sales promotion. (3) Online auction sale mechanism: There are many different variables which can be included in an online auction mechanism, such as the direct buying price (Hardesty & Suter, 2013). Since the present study is based on an existing website, it was impossible to control other valuables, and so future studies should add other control variables or carry out a simulated experiment (Jai et al., 2013). (4) Price deviation: The author calculated the reasonable B&B accommodation rates via face-to-face interviews. However, there are other rate settings that could be obtained, such as the actual product price (Chang, 2012). Moreover, the authors discussed only the end price of normal and luxury travel packages under extreme deviation. Future research on normal and luxury travel packages could further investigate the bidding process and its consequences under a moderate deviation.

Appendix D. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.tourman.2019.02.001.

Appendix A. demographic description

Experiment Occupancy	Study 1 (498) N(%)	Study 2 (501) N(%)	Study 3 (522) N(%)	Experiment Gender	Study 1 (498) N(%)	Study 2 (501) N(%)	Study 3 (522) N(%)
Students	28(5.6%)	26(5.2%)	17(3.3%)	Male	169(33.9%)	172(34.3%)	157(30.1%)
Government employees	28(5.6%)	28(5.6%)	155(29.7%)	Female	329(66.1%)	327(65.%)	363(69.5%)
Service	310(62.2%)	312(62.3%)	284(54.4%)	Missing data	0	2(.4%)	2(.4%)

Manufacture	54(10.8%)	57(11.4%)	27(5.2%)	Income(NT$)			
Self-employed	19(3.8%)	20(4.0%)	10(1.9%)	Less than 20,000	36(7.2%)	36(7.2%)	98(18.8%)
Retired	7(1.4%)	6(1.2%)	3(.6%)	20,001–40,000	173(34.7%)	176(35.1%)	269(51.5%)
Housewife	8(1.6%)	10(2.0%)	3(.6%)	40,001–60,000	153(30.7%)	151(30.1%)	79(15.1%)
Others	40(8.0%)	38(7.6%)	21(4.0%)	60,001–80,000	50(10.0%)	50(10.0%)	27(5.2%)
Missing data	4(.8%)	4(.8%)	2(.4%)	80,001–100,000	40(8.0%)	42(8.4%)	21(4.0%)
				Above 100,000	46(9.2%)	46(9.2%)	28(5.4%)
Working experience				Age			
Below 1 year	26(5.2%)	28(5.6%)	93(17.8%)	Below 20 years old	8(1.6%)	8(1.6%)	25(4.8%)
1–3 years	39(7.8%)	40(8.0%)	191(36.6%)	21–30 years old	91(18.3%)	93(18.6%)	151(28.9%)
3–5 years	66(13.3%)	64(12.8%)	41(7.9%)	31–40 years old	201(40.4%)	201(40.1%)	103(19.7%)
5–7 years	53(10.6%)	57(11.4%)	35(6.7%)	41–50 years old	138(27.7%)	137(27.3%)	71(13.6%)
7–9 years	53(10.6%)	53(10.6%)	30(5.7%)	51–60 years old	54(10.8%)	54(10.8%)	168(32.2%)
Above 9 years	259(52.0%)	257(51.3%)	131(25.1%)	Above 61 years old	6(1.2%)	8(1.6%)	3(.6%)
Missing data	2(.4%)	2(.4%)	1(.2%)	Missing data	0	0	1(.2%)
Education				Marriage			
Junior high school or below	18(3.6%)	18(3.6%)	13(2.5%)	Single	203(40.8%)	204(40.7%)	370(70.9%)
Senior high school	72(14.5%)	72(14.4%)	37(7.1%)	Married with out children	37(7.4%)	36(7.2%)	20(3.8%)
College	89(17.9%)	93(18.6%)	45(8.6%)	Married with children	255(51.2%)	255(50.9%)	127(24.3%)
University	191(38.4%)	187(37.3%)	351(67.2%)	Others	0	2(.4%)	4(.8%)
Graduate or above	128(25.7%)	131(26.1%)	76(14.6%)	Missing data	3(.6%)	4(.8%)	1(.2%)
Using internet experience				Using internet hours/per day			
Below 1 year	24(4.8%)	24(4.8%)	14(2.7%)	Below 3 h	195(39.2%)	197(39.3%)	162(31.0%)
1–3 years	30(6.0%)	30(6.05)	30(5.7%)	4–7 h	159(319%)	160(31.9%)	240(46.0%)
3–5 years	57(11.4%)	54(10.8%)	89(17.0%)	8–10 h	86(17.3%)	88(17.6%)	77(14.8%)
5–7 years	53(10.6%)	58(11.6%)	102(19.5%)	11–13 h	24(4.8%)	22(4.4%)	14(2.7%)
Above 7 years	334(67.1%)	335(66.9%)	287(55.0%)	Above 13 h	34(6.8%)	34(6.8%)	29(5.6%)

Appendix B. flow chart

1. Introduction	
2. Literature review	
2.1 Definitions and effects of relative thinking and referent thinking	Model design: Modeling development
2.2 Empirical studies of online auctions	
2.3-4 Characteristics of sales promotions and products	
3. Model	
Formula development process	
3.1 Research setting	
3.2-7 Case 1-7 development	
4. Study one: Bidding price (has vs. no) deviation from the referent price × sales promotion (monetary vs. non-monetary program)	Quantities design: Field Experiment process
5. Study two: Bidding price has a (moderate vs. extreme) deviation from the reference price × sales promotion (monetary vs. non-monetary program)	
6. Study three: Bidding price is extremely deviated from the referent price when purchasing (normal vs. luxury) goods× sales promotion (monetary vs. non-monetary program)	
(1) Experiment material design	
(2) Experiment process design	
(3) Measurement development	
(4) Statistical results	
(A) Manipulation check	
(B) Hypothesis testing	
(C) Discussion	
1. Conclusions and future suggestions	

Appendix C. Online bidding website page

Seller Information	Auction file:
Seller:http://blog.iset.com.tw/delight/ 安心賣家	Current bidding price: NT$ **2,310**
Comments :**10**(positive comments % : 88.89%)	Remaining days: 3 days (count down)
All selling products	Bidders: None
Seller : 「about me」/rating and opinions	QTY': 1
Auction: Q & A	Number of bids: 0 (bidding record)
Payment terms	Starting bid price: NT$ 2,310
From Yahoo! Kimo website to seller 輕鬆付	Bidding top up: NT$ 50
account	
·cash	Product: brand new
Transportation and delivery	Location: Pingtung county
· Seller does not deliver the goods outside the country	Starting time: 2014-05-19 20:01
· free delivery	Closing time: 2014-05-22 20:01
🚫 Recommended 輕鬆付 to avoid fraud	Item number:
	Delivery charge: hand in / no delivery charge
	Remarks:
	· Buyer may close sales early.
	·Auction time cannot be extended.

8. Gold DeSign HoteL

In July 2004, off in the distance, Nat King Cole was singing "South of the Border". The song was about Mexico, but at the time I had no idea. The words "south of the border" had a strangely appealing ring to them. I was convinced something utterly wonderful lay south of the border … (quote from South of the Border, West of the Sun by Haruki Murakami).

There were many possibilities in the place "South of the Border". In Haruki Murakami's book "South of the Border, West of the Sun", it was a very spacious, beautiful, gentle and soft place. A man who was passionately inspired by this book so much then moved to Kenting, and turned the story into a real "South of the Border" for his fantasy. South Border DeSign HoteL was established in Puding, Kenting, where there are beautiful views, big Greek-style buildings, and friendly people. It's a bit like the "South of the Border" that Nat King Cole was singing about, however different in some ways. Gold DeSign HoteL was established in Nanwan, Kenting, which has a gorgeous white sand beach and beautiful ocean view. It's like the orange-ish gold powder on the beach described in West of the Sun. So, what does South of the Border DeSign HoteL really have? You'll know when you get here in person!

Bedroom space:12.45p = 41.085 m^2
Private yard:32.88p = 108.504 m^2
- free Wi-Fi
- 2 free breakfasts (extra breakfast NT$ 200)
- air conditioning
- Cable TV
- Hot shower available 24 h
- king size bed 6 × 7; double x 1
- shower/bath separated
- DVD player (if required)
- bathroom amenities: bath towel, hand towel, face towel, shaver, shower cap, tooth brush and toothpaste, free mineral water, shower gel, shampoo, makeup (limited), refrigerator/freezer, tea kettle and hair dryer (charge for extra bathroom amenities NT$100 each set)
- Free travel and transportation information for Kenting
- Shuttle bus pick up/drop off to Kenting main street
- Program A: Guests who attend water sport activities receive a discount of NT$ 500 off
- Program B: Guests receive Kenting sightseeing tour (worth NT$500)

Authors' contribution

Dr. Liang provides research ideas, and tries to establish research framework. Meanwhile, he also designs the experiments.
Dr. Lin initiates and adjusts the model with co-authors, and she also establishes the mathematical model for this research.
Dr. Yu is in charge of data collection. She provides the analysis and synthesis of the results and writes up the conclusions.

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