

TEMPORAL FEATURES AND CONSUMER EVALUATIONS OF GROUP-BUYING: THE EFFECTS OF PRODUCT IMAGE ZOOMING

Candy K. Y. Ho, Department of Marketing, Hong Kong Baptist University, Hong Kong,
candyho@hkbu.edu.hk

Kevin Kuan, School of Information Technologies, The University of Sydney, Australia,
kevin.kuan@sydney.edu.au

Patrick Y. K. Chau, School of Business, The University of Hong Kong, Hong Kong,
pchau@business.hku.hk

Abstract

Group-buying sites such as Groupon and LivingSocial offer daily deals at large discounts of typically 50% or more. Such deals are also characterized by two temporal features. First, these deals involve lead time before they are available for redemption. Second, such deals are available for a limited time only. This study examines how the two temporal features (lead time and deal time) of group-buying deals affect consumer evaluations by drawing on construal level theory (CLT). This research also determines how such effects can be moderated by the level of zooming on product images. In two experiments, we show that (1) increasing product image zooming mitigates the negative effects of lead time on consumer evaluations, thus limiting the unattractiveness of deals with long lead time; and (2) increasing product image zooming as deal time decreases improves consumer evaluations, thereby enhancing the attractiveness of such deals as the expiration date nears. These findings can be explained by the psychological distance that is associated with the temporal features of group-buying and with product image zooming. These findings also provide practical implications for group-buying websites regarding the effective use of product images to present deals.

Keywords: group-buying, consumer evaluations, product image zooming, lead time, deal time, construal level, psychological distance.

1 INTRODUCTION

Group-buying sites such as Groupon and LivingSocial have emerged as new platforms on which companies can promote products and services (Dholakia 2010). For instance, Groupon has increased its number of subscribers from 51 million in December 2010 to more than 260 million in December 2014 (Groupon 2015a; McNaughton 2011). The company has featured more than 650,000 merchants since 2008 and promotes 140,000 deals daily in 48 countries (Groupon 2015b).

Among the most prominent features of group-buying is the large discount offered on deals, typically at 50% or more. This discount is enabled by two temporal features. First, the discounted deals have a lead time; that is, deals are paid for up front and can be redeemed at a later time (typically several weeks after the deal expires). The feature of long lead time benefits businesses by offering flexibility in the determination of production size after orders are received (Jing and Xie 2011). However, such a long lead time is not welcomed by consumers particularly in relation to popular deals because customers are more motivated to redeem popular deals more quickly (Iyengar et al. 2011; Jing 2011; Liu 2006; Luo et al. 2014).

Second, discounted deals have a definite deal time; that is, they are offered for a limited time only and will be closed at a definite time. This feature of limited deal time enhances the perceived scarcity of the deals and hence consumers' purchase intention (Cialdini 2007), especially when the deal time approaches its conclusion (Inman and McAlister 1994, Coulter and Roggeveen 2012). Hence, group-buying sites typically display the time remaining to avail of a deal, along with its description. This display increases the prominence of the effect of deal time as consumers become increasingly conscious of the time remaining to purchase a deal.

This research examines how consumer evaluations of group-buying deals change over different lead time and deal time, as well as the moderation of such changes on the basis of how deals are presented. Specifically, we investigate whether or not varying the level of zooming on a product image can mitigate the negative effects of lead time and enhance the positive effects of deal time on consumer evaluations of group-buying deals. By drawing on construal level theory (CLT) (Trope and Liberman 2010) as the theoretical foundation, we argue that different deal time and lead time are mentally associated with different temporal distances between the deal and the consumer, resulting in different levels of abstraction at which the deal is construed and evaluated. Furthermore, we propose that different levels of product image zooming (i.e., presenting a zoomed-in or zoomed-out image of the product) can influence the psychological distance between the deal and the consumer. Hence, the different levels of image zooming may be varied to either enhance or counteract the effect that is attributed to the temporal distance induced by different deal time and lead time, thereby increasing consumer evaluations of the deal.

2 THEORETICAL BACKGROUND

As mentioned previously, we draw on CLT to investigate the effects of product image zooming on consumer reactions to deals with different lead time and deal time. We first discuss the temporal features of group-buying and the characteristics of product image zooming. Then, we propose their joint influences on consumer reactions from the CLT perspective.

2.1 Temporal Features of Group-buying

Group-buying provides businesses with opportunities to sell their products in advance by offering significant discounts for a limited time. Group-buying has two unique temporal characteristics.

2.1.1 Lead Time

First, group-buying deals are typically unavailable for immediate redemption. In the case of Groupon deals, for example, goods are typically available for redemption or delivery a few weeks after the deals expire. Services (e.g., buffet dinners and massage packages) typically require advanced bookings. The lead time between the time of purchase time and that of redemption may range from weeks to months depending on the popularity of the deals. Although a long lead time enables sellers to better plan their productions, it reduces the attractiveness of the deals. Specifically, a significant discount can be perceived as a positive sign of low cost, which can enhance the enjoyment of consumers at the time of purchase. However, this discount can also be a negative sign of poor quality, which can reduce the enjoyment of consumers at the time of consumption. As the lead time increases, the time delay between purchase and consumption also increases, thus dissipating the positive influence of purchase and intensifying the negative influence of consumption (Bornemann and Homburg 2011; Lee and Tsai 2014). In particular, this problem is often perceived in popular deals because consumers are motivated to redeem deals early (Iyengar et al. 2011; Jing 2011; Liu 2006; Luo et al. 2014). Hence, consumers are likely to react negatively to a deal with a long lead time (such as low purchase intention).

H1: Lead time has a negative effect on consumer purchase intention.

2.1.2 Deal Time

Second, group-buying deals are offered for a limited time period that may range from a few days to a few weeks. Purchase intention tends to be higher for a time-limited deal than for a time-independent deal (Aggarwal and Vaidyanathan 2003, Inman and McAlister 1994, Coulter and Roggeveen 2012). The unavailability of the deal by a certain period generates a perception of scarcity, which induces action by playing upon consumers' fear of "losing out" (Cialdini 2007). Consumers may also anticipate the regret of missing a favorable deal. This anticipated emotion becomes a piece of information for making a decision, thus driving consumers to avail of the deal (Schwarz and Clore 2003). Furthermore, the high purchase intention for a time-limited deal intensifies as the deal approaches its expiration because consumers have limited time to evaluate all product attributes

systematically before making a purchase decision. Rather, they likely rely on heuristics to evaluate the product (Petty and Cacioppo 1986). A commonly used judgmental heuristic is the inference of the value of a deal on the basis of price (Monroe 2002). The combination of a significant discount with a limited deal time suggests that consumers are likely to perceive a highly discounted deal as valuable, which drives them to purchase the deal before it expires (Coulter and Roggeveen 2012). Hence, consumers likely have a higher purchase intention to a group-buying deal as deal time decreases.

H2: Deal time has a negative effect on consumer purchase intention.

2.2 Product Image Zooming

Customers typically form their first impressions of a product based on its visual appeal. Therefore, the quality of product images significantly affects the attitudes of customers toward the product, as well as their purchase intention (Jiang and Benbasat 2005). Product image is widely used in online advertising and promotion (Kelton et al. 2010). Such a display often includes a zooming function that enables consumers to view products at various levels of detail. This zooming function facilitates their understanding and evaluation of such products (Jiang and Benbasat 2005).

We argue that one visual effect of product image zooming is on the perceived spatial distance between the product and the consumer. A product appears close to a consumer when the image is zoomed in and distant when the image is zoomed out. Since childhood, we learn from our daily experiences that proximal objects appear to be larger, whereas distant objects appear to be smaller in size. For instance, as we walk toward and become closer to an object, such object appears to be larger. Through this type of experience, we learn and develop our visual perceptual system to facilitate sense-making of the world (Gregory 1970).

Likewise, from the CLT perspective, we argue that product image zooming varies the psychological distance (in the spatial dimension) between the product and the consumer. Psychological distance refers to the subjective experience of how close or distant an object or event is from oneself (Trope and Liberman 2003, 2010). Such distance can be manifested in different dimensions, namely, temporal, social, spatial, and hypothetical. For instance, an object or event can be psychologically distant from an individual in the sense that it will occur in the distant future (temporal distance from now), is related to an unfamiliar acquaintance (social distance from oneself), will occur at a geographically distant location (spatial distance from here), and/or is unlikely to occur (hypotheticality or likelihood of occurrence). According to CLT, the psychological distance between a product and a consumer affects the level of abstraction that a product is represented (Liberman and Förster 2009), which has been found to profoundly influence judgments and decisions (Liberman and Trope 1998), information processing (Liberman et al. 2002; Malkoc et al. 2005), and behavior (Stephan et al. 2010). Therefore, a magnified, zoom-in product image reflects a close spatial distance between the product and consumers, thus driving consumers to represent the product in relatively concrete, specific terms, whereas a diminished, zoom-out product image presents the product as

spatially distant to consumers, thereby causing consumers to represent the product in relatively abstract terms.

2.3 Interactions with the Temporal Features of Group-buying

CLT suggests that group-buying deals with different lead time and deal time are associated with different psychological distances (in the temporal dimension) between deals and consumers. Specifically, longer lead time and deal time are associated with more distant future consumption and decision, respectively, which in turn are associated with a greater temporal psychological distance (Trope and Liberman 2010). CLT suggests that the spatial psychological distance associated with product image zooming interacts with the temporal psychological distance associated with lead time and deal times. These two distances can *jointly* influence how consumers evaluate deals.

2.3.1 Lead Time

CLT research suggests that when an object or event can be represented in multiple psychological distance dimensions, the perceived psychological distance in one dimension can be influenced by that in another dimension. Furthermore, among the different dimensions of psychological distance, the spatial dimension is more fundamental than the temporal, social, and hypothetical dimensions (Zhang and Wang 2009). The notion is that spatial distance is relatively more tangible and can be understood directly in terms of daily experiences (Lakoff 1990). The other three dimensions are relatively more intangible; we make sense of them on the basis of spatial distance (e.g., we define a month as the time required by the moon to circle the earth; Zhang and Wang 2009). Hence, the spatial dimension exerts a greater influence on the other dimensions rather than the other way round.

The priming effect of the spatial dimension on the other psychological distance dimensions suggests that a perceived temporal distance between a deal and a consumer can either be greater or smaller depending on the perceived spatial distance between them. Hence, the negative effect of a long lead time that is associated with a long temporal psychological distance can be mitigated by zooming in on the product image. A zoomed-in product image induces the perception of a short spatial psychological distance between the deal and the consumer. This perception can influence consumers to perceive the lead time to be shorter, hence mitigating the negative evaluations (such as reduced purchase intention) that are associated with long lead time.

H3: The negative effect of lead time on consumer purchase intention is weaker with a zoomed-in product image than with a zoomed-out product image.

2.3.2 Deal Time

According to CLT, deal time is associated with the temporal psychological distance between a deal and a consumer. A deal that has just been started with much time left for purchase is temporally distant from the consumer. By contrast, a deal that is about to expire is temporally near. Similarly, product image zooming is associated with the spatial psychological distance between a deal and a consumer. A deal with a zoomed-out image is spatially distant from the consumer, whereas a deal with

a zoomed-in image is spatially near. When the temporal psychological distance between a deal and a consumer matches the spatial psychological distance between them, these two dimensions draw the attention of the consumer to the product features at the same construal level. Such a fit in construal level associated with both the temporal dimension and spatial dimension increases the processing fluency of deal information (Schwarz 2004). This fit also enhances the persuasiveness of the deal and increases the purchase intention of such deals (Higgins et al. 2003; Lee et al. 2010). In other words, consumer purchase intention is higher when a zoomed-out product image is used to present a long-term deal (vs. short-term deal) and when a zoomed-in product image is used to present a short-term deal (vs. a long-term deal).

H4a: When the deal time is long, a zoomed-out product image elicits higher consumer purchase intention than a zoomed-in product image does.

H4b: When the deal time is short, a zoomed-in product image elicits higher consumer purchase intention than a zoomed-out product image does.

3 STUDY 1: EFFECTS OF PRODUCT IMAGE ZOOMING AND LEAD TIME

Study 1 examines the effects of product image zooming on consumers' purchase intention for products with different lead times through a controlled experiment. Participants were asked to evaluate three group-buying deals. Each deal consisted of a product image and a short text description of two to three lines. These deals were displayed one by one on a computer screen for 30 seconds. An open-end question was then presented below each deal that prompted the participants to list out their thoughts about the deal. At the end of the experiment, participants were asked to respond to a post-experiment questionnaire on other measures pertaining to the experiment and to provide demographic information. A total of 53 undergraduate students from a major university in Hong Kong participated in the study. They were awarded HK\$30 for their participation.

3.1 Manipulations

The experiment adopted a 2 (product image zooming) \times 2 (lead time) \times 3 (product type) mixed design. Product image zooming (zoom-out vs. zoom-in) was manipulated between-participants. Participants were randomly assigned to evaluate either deals with zoomed-out product images (zoom-out condition) or those with zoomed-in product images (zoom-in condition). Figure 1 shows an example of the zoomed-out and zoomed-in product images used in the experiment. Both product images were prepared based on the same original image. A 1 \times zooming factor was applied to the zoomed-out product image and a 4 \times zooming factor to the zoomed-in product image. Other than this zooming factor, these product images were identical in terms of frame size and picture quality.

Lead time (immediate vs. three months later) and product type (fruit yogurt vs. sandwich vs. ice cream) were manipulated within-participants. These products were chosen based on the group-buying

deals that are commonly sold on group-buying websites in Hong Kong. The participants evaluated the three products one by one. They evaluated product deals under two circumstances; that is, if the deal was available for redemption immediately and if it was to be redeemed three months later. In other words, each participant evaluated six deals.



Figure 1. Zoomed-out (left) vs. Zoomed-in (right) Product Images

3.2 Measures

Consumer evaluations were measured on a seven-point scale ranging from “very unwilling” (1) to “very willing” (7) in terms of willingness to purchase each of the three deals given different lead times.

3.3 Results

Purchase intention ratings were analyzed using a 2 (product image zooming) \times 2 (lead time) \times 3 (product type) repeated measures ANOVA. Product type had no significant interactive effect with other variables ($ps > .10$). Hence, we collapsed the product type conditions by averaging the purchase intention ratings across the three product types. The results of a 2 (product image zooming) \times 2 (lead time) repeated measures ANOVA on the averaged purchase intention rating revealed a significant effect of lead time ($F(1, 51) = 16.47, p < .001$) on purchase intention. Purchase intention was significantly higher when the deals were available for immediate redemption ($M = 4.49$) than when the deals were available for redemption after three months ($M = 3.57$). Hence, H1 was supported.

In addition, this effect was qualified by a significant interaction, ($F(1, 51) = 6.41, p < .05$). When the product was presented with a zoomed-out image, the participants reported a significantly lower purchase intention when they could redeem the product after three months ($M = 2.95$) than when they could redeem it immediately ($M = 4.44; F(1, 51) = 22.14, p < .001$). However, this effect was nullified when the product was presented with a zoomed-in picture. The participants reported comparable purchase intentions regardless of whether the product could be redeemed immediately ($M = 4.53$) or three months later ($M = 4.18; F(1, 51) = 1.14, p > .20$). These results support H3 (Figure 2).

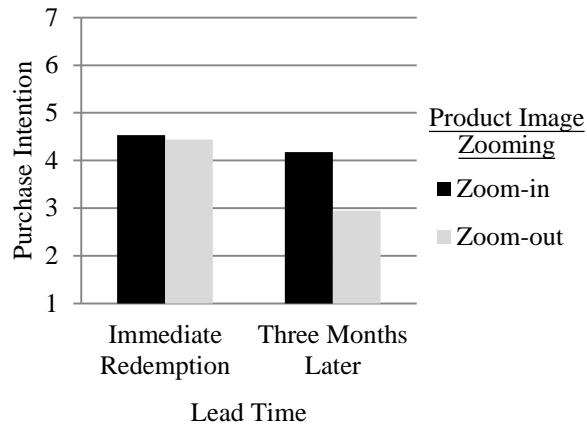


Figure 2. Effects of Product Image Zooming and Lead Time on Purchase Intention

4 STUDY 2: EFFECTS OF PRODUCT IMAGE ZOOMING AND DEAL TIME

Study 2 investigates the effects of product image zooming in moderating consumer reactions to group-buying deals with different deal times. In the experiment, participants were asked to evaluate one group-buying deal. As in Study 1, the deal consists of a product image and a short text description. The deal was displayed on a computer screen for 30 seconds and followed by an open-end question that prompted participants to write down their thoughts about the deal. At the end of the experiment, the participants were asked to answer a post-experiment questionnaire. A total of 156 undergraduate students were recruited and were awarded HKD\$30 for their participation in the study.

4.1 Manipulations

The study adopted a 2 (product image zooming: zoom-in vs. zoom-out) \times 2 (deal time: short vs. long) \times 2 (product type: scarf vs. bag) between-participants design. Participants were randomly assigned to evaluate a deal for either a scarf or a bag. The deal consisted of either a zoomed-out product image (zoom-out condition) or a zoomed-in one (zoom-in condition). The deal also displayed a deal time of either “8 days 10hrs 30min 5sec” (long deal condition) or “30min 5sec” (short deal condition).

4.2 Measures

Consumer evaluations were measured with two seven-point scales (not at all/definitely, not at all likely/very likely; $\alpha = 0.95$) in terms of “how likely would you purchase the advertised item?”

4.3 Results

A 2 (product image zooming) \times 2 (deal time) \times 2 (product type) ANOVA revealed that product type did not interact with other factors ($ps > .05$). Hence, we collapsed the product type conditions and analyzed the data by running 2 (product image zooming) \times 2 (deal time) ANOVA.

ANOVA results revealed that deal time did not have a significant effect on purchase intention ($F(1, 152) = 1.05, p > .40$). Thus H2 was not supported. Central to our prediction, ANOVA results also revealed that product image zooming and deal time had significant interaction on purchase intention, ($F(1, 152) = 9.04, p < .001$). In accordance with H4a, participants expressed a higher intention to purchase the product presented with a zoomed-out image ($M = 3.06$) than that presented with a zoomed-in image ($M = 2.37; F(1, 152) = 4.27, p < .05$). In support of H4b, this pattern was reversed when the deal was only minutes away from closing (i.e., short deal time); that is, the zoomed-in product image induced a significantly higher purchase intention ($M_{\text{zoom-in}} = 2.92$ vs. $M_{\text{zoom-out}} = 2.18; F(1, 152) = 4.77; p < .05$) than the zoomed-out product image did (Figure 3).

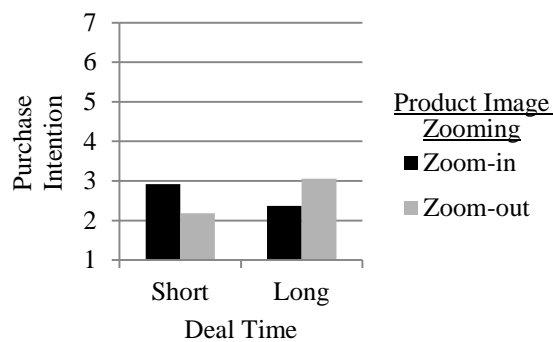


Figure 3. Effect of Product Image Zooming and Deal Time on Purchase Intention

5 DISCUSSION

This research examines how the temporal features of group-buying, namely, lead time and deal time, influence consumer reactions to group-buying deals. This work also investigates how these effects may be facilitated or hindered by the presentation of product images with different levels of zooming. On the basis of CLT, we argue that the unfavorable effect of long lead time on deal evaluation can be mitigated by the use of a zoomed-in product image. Conversely, a deal may receive more favorable evaluation as deal time decreases by increasing product image zooming.

Our claims are generally supported by our two studies. Study 1 showed that although a long (vs. short) lead time to redemption reduces the purchase intention of the participants, the use of a zoomed-in (but not a zoomed-out) product image can mitigate this negative effect. These findings are consistent with our contentions that a zoomed-in product image induces consumers to perceive spatial proximity to the product. This perception can influence their time perception, shorten the perceived waiting time for redemption, and hence mitigate the negative influence of a long lead time.

Interestingly, Study 2 indicated that enhancing the influence of deal time requires more than one product image. Specifically, the level of product image zooming should increase as the deal time decreases. Thus, mapping a far-from-closing deal with a zoomed-out (vs. zoomed-in) product image and a close-to-closing deal with a zoomed-in (vs. zoomed-out) product image enhances purchase

intention. We did not find an overall favorable effect of deal time as we expected (i.e., H3 is not supported). It might be that such effect was overshadowed by the significant interactive effect between deal time and product image zooming. The interactive effect pattern supports our “construal fit” account; that is, a match (vs. mismatch) between the temporal distance of the deal as induced by deal time and the construal of the deal as induced by the product image should enhance deal persuasiveness, and consequently, deal evaluation and purchase intention.

5.1 Implications and Limitations

This research makes several contributions to theory and practice. In terms of theory, it applies the construal level perspective to understand the effects of the temporal characteristics of group-buying on consumer perceptions and how these effects can be moderated by product image presentation. While a number of studies have focused on the large discounts that are characteristic of group-buying deals, only few studies have explored the temporal features of group-buying, that is, deal time and lead time. Little has been known about their effects on consumer decisions and how information systems (IS) can be used to either enhance the positive effects or mitigate the negative effects of these temporal features on consumer reactions. The construal level perspective addresses all of these issues; it also generates new explanations and predictions that are not readily offered in previous studies.

In practice, this study provides group-buying sites with design guidelines on effectively exploiting product image displays to either mitigate the negative effects or magnify the positive effects of the temporal characteristics of group-buying deals on consumer reactions. First, group-buying sites may prefer a long lead time to increase cash flow and production flexibility. However, this condition is undesirable for consumers and may even drive them away. Our findings suggest that group-buying sites can use a zoomed-in product image in presenting group-buying deals to enjoy the benefits of a long lead time without deterring customers. Second, group-buying sites should vary the product image display as deals approach expiration. At present, most group-buying sites either do not modify the level of zooming of their product images or allow consumers to vary the level of zooming at their will. Interestingly, our findings suggest that group-buying sites should increase the zooming of the product image as the deal progresses to the end.

The findings of this study should be interpreted in conjunction with its limitations. The two experiments were conducted with undergraduate students. Moreover, the products were restricted to low-cost items that are commonly offered on group-buying websites, such as food and fashion accessories. In the case of Groupon, however, roughly a quarter of its customers fall in the 18–24 age bracket, and more than half of its deals are related to food and restaurant dining (Media Post 2011). Future studies are encouraged to replicate our findings with a broader sample of subjects and products.

5.2 Conclusions

This research examines how the variation in the zooming level of product image displays in group-buying deals can facilitate the influences of the temporal features of these deals on consumer evaluations from the CLT perspective. The results of the two experiments showed that (1) increasing the level of product image zooming with lead time can diminish the discounting of consumer purchase intention and that (2) increasing the level of product image zooming with a decrease in deal time can magnify consumer purchase intention. These findings contribute to group-buying literature by enhancing our understanding regarding the temporal characteristics of group-buying and how IS can be used to either enhance the positive effects or mitigate the negative effects of these temporal features on consumer evaluations. These findings also provide practical implications to group-buying websites regarding the effective use of product image displays for deals with varying lead times and deal times.

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