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The Formation Mechanism of Consumer Product Attitude in Online Infomediary

Sunghun Chung  
KAIST Business School, cshhm1@business.kaist.ac.kr

Ingoo Han  
KAIST Business School, ighan@business.kaist.ac.kr

Minnseok Choi  
KAIST Business School, cooldenny@business.kaist.ac.kr

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Chung, Sunghun, KAIST Business School, Hoegiro 87, Supex 2307, Dongdaemoon-gu Seoul, Republic of Korea, cshhm1@business.kaist.ac.kr
Han, Ingoo, KAIST Business School, Hoegiro 87, Supex 2306, Dongdaemoon-gu Seoul, Republic of Korea, ighan@business.kaist.ac.kr
Choi, Minnseok, KAIST Business School, Hoegiro 87, Supex 2307, Dongdaemoon-gu Seoul, Republic of Korea, cooldenny@business.kaist.ac.kr

Abstract

The online infomediary, playing an important role in e-commerce, provides more unbiased and refined product information than usual advertisement provided by online retailers. Interestingly, depending on its capability, the quality of product information is likely to differ. Also, given the fact that it enables consumers to grasp market price dispersion of products, the context of online infomediary is a good context to investigating the effects of price dispersion. Despite the several previous endeavors that studied the existence of price dispersion in e-commerce, the reaction of consumers to price dispersion have not been investigated in a comprehensive way. This paper uses the elaboration likelihood model to explain how the level of involvement with a product moderates the impact of price dispersion and product information quality on consumer product attitude in online infomediary. A study conducted to test hypotheses has largely confirmed our expectations: (1) Interaction effects between involvement and price dispersion on consumer product attitude is significantly confirmed. (2) For low-involvement consumers, price dispersion of a product positively affects consumer product attitude, and for high-involvement consumers, it produces a negative effect, (3) Low-involvement consumers are affected by price dispersion rather than the quality of product information, but high-involvement consumers are mainly affected by price dispersion when the quality of the product information is low. These findings have implications for online infomediaries in terms of how to manage their users.

Keywords: online infomediary, price dispersion, elaboration likelihood model, price comparison.
INTRODUCTION

The explosive growth of the internet brought many business models and environmental effects to e-commerce. The internet has made it easier for consumers to obtain information about products and prices (Chu et al., 2005). However, the search cost of product information in online gives some ignorable cognitive load to consumers. Given these facts, the emergence and growth of the online infomediaries such as Mysimon.com or Pricegrabber.com has allowed consumers the opportunity to get price quotes from enrolled brick-and-mortar retailers or online retailers, and direct consumer traffic to particular retailers who join them (Chen et al., 2002). They, online infomediaries, collect and display information on a variety of products and service characteristics, and list the summary information on both price and product attributes (Su, 2007). So, the online infomediary has a positive effect on consumer welfare from the perspective that it plays an important role as an aggregator between consumers and online retailers. Before the emergence of online infomediaries, the end point of contact was a general online retailer; however, as online infomediaries appear, the new end point of contact is shifting from online retailers to online infomediaries. According to “2007 Survey on the Computer and Internet Usage” by the Korean Government, 51.7% of users say that “After visiting a price comparison site and comparing prices, buy the product.” These result means that the online infomediary plays a new channel role in the e-commerce era.

In contrast to usual online retailers, online infomediaries provide more unbiased information on products than that of online retailers (Chu et al., 2005). The product information provided by the online infomediary is considerably different from the present advertising product information provided by online retailers in the aspect that it is filtered through the information provided by online retailers. Thus, the product information provided by the online infomediary is more product-oriented, refined, and less advertised than the product information provided by online retailers. Of particular significance is that depending on the online infomediary’s capability, the quality of product information can be filtered in different ways. For instance, an online infomediary which has high ability to gathering information from online retailers provides well organized product-attribute information, and it enables consumers to understand product features easily. In contrast, unorganized or omitted product attributes is due to poor online infomediaries’ ability, and it can be harmful to consumers’ product attitude.

From the aspect of consumers, the main difference between online infomediaries and conventional online e-retailers is that consumers can grasp the market price dispersion of a product easily from the online infomediary. The price dispersion of a product originated from various types of price discrimination, distribution strategies and cost structures in the online market (Bock et al., 2007). Actually, in online infomediary, there are many prices lists on each product given by various online e-retailers, and consumers can easily capture the price range and what the lowest price is. Starting from Stigler’s study, many studies about price dispersion have focused on the existence and persistence of price dispersion (Stigler, 1961; Lach, 2002; Clay et al., 2001). The definition of price dispersion is, “The distribution of prices of an item with same measured characteristics across sellers, as indicated by measures such as range and standard deviation of prices” (Pan et al., 2002; Cleons et al., 2002; Srivastava, 2001; Baylis and Perloff, 2002). Pan et al. (2002)’s study found that online price dispersion is persistent, even after controlling for e-retailer heterogeneity. In addition, the price dispersion of products in an online market exists for various products and industry categories including the online travel market (Cleons et al., 2002). While many studies of price dispersion offer much food for thought, what is missing from the literature is a discussion of how price dispersion affects consumers’ buying behavior.

In the online infomediary context, the information on the product and price including range and distribution can crucially affect consumers’ information processing. Especially interesting from our point of view is that consumers’ involvement can moderate attitude toward product in their information processing. According the elaboration likelihood model (ELM), the same information can
be processed in different ways depending on consumer involvement. Applying ELM to online infomediary consumers, one would expect the quality of product information to be a major factor for high-involvement consumers, and one would expect heuristic cues such as the lowest price to be a crucial factor for low-involvement consumers (Petty and Cacioppo, 1984).

The present study thus aims at understanding how the quality of product information and the level of price dispersion of a product affects consumer product attitude in the online infomediary before they transfer from the online infomediary to online retailers. The authors believe that the quality of product information and its price dispersion can affect customer product attitude, and these effects can be moderated by consumer involvement. This paper attempts to apply ELM to online infomediary users’ information processing in company with price dispersion issue, and to gain insight into the ambiguity surrounding two kinds of information. Specifically, three major issues are investigated in this study: (1) Do the online infomediary’s informational role work well? (2) When does the difference in customer reaction to price dispersion occur? (3) Why do these reactions occur? To focus on these, this study shows the underlying mechanism through which product information quality and price dispersion influence consumer product attitude. An understanding of the two kinds of information affecting consumer product attitude is important not only the theoretical standpoint of understanding the formation of attitude toward product in online infomediary, but it also has substantial practical implications for online marketers.

2 THEORETICAL BACKGROUND AND HYPOTHESES

Under the asymmetric information condition between sellers and buyers, online infomediaries provide a mechanism that can solve this asymmetric problem in an online environment (Chu et al., 2005). This mechanism can be different from that of traditional online retailers. First, the online infomediary gives lower search costs for consumers by aggregating the information including product attributes and prices provided by the various vendors such as online retailers and manufacturers (Lee, 2000). Second, the online infomediary plays a role as a guarantor of product quality by aggregating and evaluating numerous products (Chu et al., 2005). Finally, the online infomediary gives consumers a chance to buy products cheaper by showing the price range of a certain product in the result screen. In literature review, focusing to the role of online infomediary, this study proposes some hypotheses based on the previous research.

2.1 Effects of the quality of product information on consumer product attitude and Involvement

For the most part, past critical debates about information quality in MIS literature have tended to center around these factors; relevance, credibility, objectiveness, and sufficiency (Bailey and Pearson, 1983; Negash et al., 2003; Srinivasan, 1985). MIS researchers have reached nearly universal consensus that extensive information results in consumer satisfaction and this satisfaction with information produces positive consumer product attitude. According to marketing studies, the research on argument quality focuses on the message contents. In case of a strong argument, the message attributes are understandability, objectiveness, and sufficiency. In case of a weak argument, the message attributes are emotion, abstractness and subjectivity (Petty and Cacioppo, 1984; 1983). Many studies found that high quality messages create more favorable attitude (Petty and Cacioppo, 1983; Petty and Wegener, 1998). In the online infomediary context, the product information provided by the online infomediary is defined with informational characteristics (relevance, understandability, sufficiency, and objectivity). Contrary to the existing advertising messages, the product information provided by the online infomediary has a higher level of relevance and objectivity because it was filtered and refined by the online infomediary, and it contains very few advertising messages. Therefore, it seems appropriate to limit these informational characteristics to understandability and sufficiency. The product information provided by the infomediary depends on the ability of the
infomediary and it varies directly with the effort of the infomediary. So far, relatively few studies have been devoted to an empirical examination of the role of the online infomediary: the informational role. Other things being equal, product information that is more understandable and sufficient has a greater positive effect on consumer product attitude in the online infomediary. Therefore, the following hypothesis is proposed.

**H1. The quality of product information provided by the online infomediary positively affects consumer product attitude.**

In recent years, numerous studies have attempted to find and explore consumer information processing. In particular, involvement has been vigorously researched by many studies. Involvement is defined as the person’s perceived relevance of a product based on inherent needs, values, and interests (Krugman, 1966; Zaichkowsky, 1985). When consumers see the product information through the online infomediary screen, consumer information processing can differ depending on the level of involvement. ELM provides a theoretical approach to consumer information processing in respect of the product information provided by online infomediary. According to ELM, consumers who have motivation and ability are more likely to engage in cognitively effortful processing of persuasive arguments, and they consider a message via the central route (Macinnis et al., 1991). On the other hand, consumers who are insufficiently motivated or lack ability are more likely to engage in mentally noncontent cues via peripheral routes. ELM says that the more involvement increases, the more consumers are motivated to elaborate the salient information, and they have systematic processing of judgment-relevant information. When consumers have low involvement, however, they experience the mismatch between cognitive resources and the resources required, and they tend to rely on peripheral cues such as the sheer number of arguments – the numerosity heuristic. Applying Petty and Cacioppo’s study to the online infomediary context, the effect of the quality of product information can vary with involvement (Petty and Cacioppo, 1984). When consumers encounter stimuli from the online infomediary web screen, high-involvement consumers seek as much useful information as they can from the product information provided by the online infomediary. On the other hand, low-involvement consumers have less concentration on product information, and they simply rely on other heuristic cues such as the lowest price. Therefore, through the following hypothesis, we want to know that the online infomediary-informational role is achieved satisfactorily, and whether the online infomediary is a new channel that can give superior product information quality, or whether it is just an aggregator.

**H2. The quality of product information provided by the online infomediary has a stronger positive effect on the product attitude of high-involvement consumers than low-involvement consumers.**

### 2.2 Involvement and price dispersion

To capture the level of price dispersion, it seems reasonable to assume that consumers need some cognitive effect. Low-involvement consumers are likely to concentrate their limited attention more to a heuristic cue – the lowest price - in the price set provided by various online retailers rather than capturing overall price dispersion. The main object for low-involvement consumers is how much cheaper they can buy the product using the online infomediary, other things being equal. The lowest price is, as it were, an anchoring point for low-involvement consumers. The difference between high level price dispersion and low level price dispersion is the price range, which contains both the lowest and highest prices and standard deviation. Low-involvement consumers who pay little attention to price dispersion and have few cognitive resources are not likely to capture the change of the range and standard deviation of the price set. So, when the level of price dispersion increases, they only focus on the lowest price, and high-level price dispersion has a cheaper lowest price than low-level price dispersion in our laboratorial setting. In a manner, high-level price dispersion means that the lowest price in high-level of price dispersion is lower than the lowest price in low-level price dispersion. This description may be seen as representing that the effect of the increase of price dispersion is analogous to that of the decrease of the lowest price in the price set provided by the online infomediary for low-
involvement consumers. So, as the lowest price decrease, low-involvement consumers form more favourable consumer product attitude by simple inference rules - “more cheaper is better other things being equal.” This mechanism seems plausible, yet it requires further examination through empirical testing. Therefore, for low-involvement consumers, the following hypotheses are proposed.

H3. For low-involvement consumers, price dispersion of the product positively affects consumer product attitude.

To flesh out the difference in consumer product attitude, we now turn to high-involvement consumers. High-involvement consumers who pay much attention to price dispersion and have high cognitive resources are likely to concentrate the whole price dispersion, and to process a great deal of price information. When two different levels of price dispersion (high vs. low) are presented, high-involvement consumers can estimate the expected price for which they can buy. If high and low level of price dispersions have the same average price only, but they are different in terms of the range and standard deviation of price set, their estimated average price in the price set will not differ. This setting is necessary to avoid the compounding effect that is caused by the movement of the average of price sets. In this study, we are faithful to the definition of price dispersion that indicates differences such as range and standard deviation of prices. Given these interpretations, it appears likely to us that holding the average price of price sets is essential to understand the change of price dispersion. However, they may be suspicious as to why this product is being sold at various prices. For example, high-involvement consumers would expect to have high confidence with a marked price (or low level price dispersion) across all online retailers. They also may think that they don’t need to take the risk of obstinately buying from an online retailer with the lowest price. In case of high level of price dispersion, they may worry about the causes of various prices for a product. This situation is more evident when applying the attribution theory.

According to the attribution theory, dissonance or disconfirmation makes consumers find an explanation by letting them go through attribution processes. At the introduction of the seminal concepts underlying the attribution approached by Heider (1958), Kelly (1973) elaborated on the attribution theory in terms of how individuals infer causes, and Weiner (1985, 1986) developed extensively the identification of causal dimensions or underlying causal structures (Folkes, 1988). One of the core concepts involves the nature of the inferential process. Consumers make assumptions about the cause of a particular situation and make causal inferences based on these assumptions as if they were naïve psychologists (Heider, 1958). In essence, attribution theory formalizes the observation that humans tend to ask “why?” Applied to the online infomediary context, attribution theory posits that when high-involvement consumers are faced with high level price dispersion, they can attribute claims either to product matters or to the online retailer cost structure. The main point is whether high-involvement consumers’ attributional root is a product matters or not. They are likely to be suspicious about why the product is selling at various prices, and their attitude toward product will be lowered because price-performance risk of the product is heightened as attributional processing is revitalized. These causal inferences would be generated by consumers who have many cognitive resources - high-involvement consumers. Therefore, for high-involvement consumers, the following hypotheses are proposed.

H4. For high-involvement consumers, price dispersion of the product negatively affects consumer product attitude.

2.3 The moderating role of involvement with product information quality and price dispersion

For low involvement consumers who have low cognitive capacity, their central route of information processing is how they can buy product cheaply. In this process, the product information provided by online infomediary becomes a peripheral cue for them. Low involvement consumers can pass lightly attributes of product information and focus the lowest price.
High involvement consumers who have high cognitive capacity, but, their main central focus is what are attributes in target product. So, they search product attribute from the product description pages, less likely lay weight on the level of price dispersion. In such a case, when the quality of product information provided by online infomediary is low, their attributional process can work and product’s performance risk is able to increase. Therefore, combining into two factors with involvement, following hypotheses are proposed.

**H5.** For low-involvement consumers, the effect of price dispersion of the product is not different with high or low quality product information.

**H6.** For high-involvement consumers, the effect of price dispersion of the product is greater with low quality product information than with high quality product information.

### 3 RESEARCH DESIGN AND METHOD

#### 3.1 Design, Subjects, Experimental System, and Procedure

The present study uses a $2 \times 2 \times 2$ between-subjects experiment manipulating product-attribute information quality (high vs. low), price dispersion (high vs. low), and involvement (high vs. low). Two hundred fifty-eight college students participated in the study voluntarily. Their average age is 24 and 52.3% is male. Most of the subjects had used an online infomediary such as mysimon.com. Subjects were randomly assigned to each of the cells in the factorial design, and they participated in different experimental conditions in a single session. The product used in the experiment was a digital camera. Because, a digital camera is frequently purchased in the online B2C market, and consumers tend to collecting information about electronic products from a variety of media such as online infomediaries before they buy it. For the experiment, eight-independent virtual online infomediary sites were constructed each condition. The online infomediary sites contained both product-attribute information and the price set provided by online retailers. In the online infomediary screen, a picture of the product without the brand name was provided. This experimental system encapsulates the attributes of a real online infomediary. In an experiment, the subjects followed instructions that address a scenario manipulating different involvement. Then product information and price set information were provided to each group. Subsequently, the subjects gave an answer questions about product attitude, price-perceived risk, manipulation checks, and recall checks in regular sequence.

#### 3.2 Independent Variables

##### 3.2.1 The quality of product-attribute information

Based on the product information from a real online infomediary, twelve candidates for product information were collected. Each product-information contained an attribute of information such as recording resolution, lens brightness, and zoom function, and the length of information was set at 6 lines. The length of each description was controlled to avoid the effects of information quantity, and to focus on the effect of the online infomediaries’ ability. The criteria for judging the quality of product information were objectiveness and sufficiency. High-quality information stated clearly all of the attributes in full and enabled consumers to understand product functions based on attributes. Low-quality information contained an unrelated persuasive message rather than product-attribute information, and did not refer to some attributes in detail. This information causes insufficiency for consumers. Table 1 shows examples of product information provided by the infomediary. To increase face validity, thirteen subjects participated in a pretest that checks whether this information was perceived in the appropriate dichotomy (high vs. low). In the main experiment, relatively different product information was used.
### Table 1. The quality of product information

<table>
<thead>
<tr>
<th>Low Quality</th>
<th>High Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>High recording resolving power: very good power</td>
<td>High recording resolving power: max 3648 □ 2736</td>
</tr>
<tr>
<td>Lens brightness: variety of brightness</td>
<td>Lens brightness: F2.8~5.1</td>
</tr>
<tr>
<td>Zoom function: possible</td>
<td>Zoom function: optical 3□, digital 4□</td>
</tr>
<tr>
<td>Sensitivity: 5 types sensitivity</td>
<td>Sensitivity: auto, ISO 100/200/300</td>
</tr>
<tr>
<td>Shutter speed: various shutter speed provide</td>
<td>Shutter speed: 1~1/1500(sec), manual</td>
</tr>
<tr>
<td>Exclusive battery provided</td>
<td>Exclusive battery: Lithium ion</td>
</tr>
</tbody>
</table>

#### 3.2.2 The price dispersion of a product

A focus group interview organized with ten people who frequently use online infomediaries was performed. In the FGI, subjects were asked how much a digital camera costs in the online infomediaries and the level of price dispersion for digital was gathered. After the FGI, we checked price dispersion in actual online infomediaries ourselves, then, we generated experimental price sets. Table 2 shows two different levels (high vs. low) of price dispersion for a digital camera. In the experiment, two different levels of price dispersion have the same average price, and the number of prices presented by online retailers to avoid confounding effects owing to the change in the average price of the price sets. The average price of each price set is $255.56. The degree of standard deviation of the price set that has the high dispersion level is 9.34, and the standard deviation for the low dispersion level is 1. The quantity of each price set was fixed at ten. Following the definition of price dispersion, each interval of prices was adjusted equally. The price sets generated in this way were inspected again by subjects who join the FGI, and then were used in main experiment.

![Price dispersion table](image)

#### 3.2.3 Involvement

To manipulate involvement, we provided a role-play for subjects in the introductory session. This manipulation is very much like that of situational involvement in past studies (Maheswaran and Sternthal, 1990; Meyers-Levy and Peracchio, 1995). The role-play that induced subjects to have high-involvement portrayed a scenario which asked them to imagine that they were buying a digital camera for someone they love and they were searching for the digital camera in an online infomediary site. In addition, they were told that they were specially selected for this study, and their answers would be treated as important. This manipulation enables subjects to concentrate on the related information on digital cameras such as product-information and price-information. The role-play that induced subjects to have low-involvement expressed a scenario that asked them to imagine a situation in which they were browsing through an online infomediary site for enjoyment and opened a digital camera web page. Also, they were told that their answers would be treated as one part of many other answers. It is clear that this manipulation generated a different volume of goal directedness, and these methods were employed in the past studies (Maheswaran and Sternthal 1990; Meyers-Levy and Peracchio 1995). Due to the dichotomized involvement level, the high-involvement subjects processed the information provided by infomediary (Product- and Price-) more carefully via their central route, but the low-involvement subjects didn’t to do this. This is consistent with ELM.
3.3 Control Variables and Dependent Variable

Control variables: Experimental systems should consider other effects such as the characteristics of subjects and exogenous stimuli on all matters. It could be affected by attitude toward the online infomediary, prior knowledge about product, brand, retailers’ reputation, and general reference price. To focus our independent variables and increase internal validity, the following methods were employed to control confounding effects on consumer product attitude. First, the characteristics of subjects comprising individual differences such as online shopping styles and personality were controlled by allotting subjects to each condition (or cells) at random. Second, this present experiment used imaginary retailers’ names. If we consider the retailers’ reputation, many compounding effects are revealed. A retailer which has a strong reputation may tempt consumers, and they only regard the reputational cue as serious. In this case, since the online infomediaries’ role (i.e. informational role) cannot work, we did not polemicize with the retailers’ reputation. The brand effect was controlled by hiding the brand name and providing a normal design, not a brand-peculiar design. To focus our hypothesis, one of the sources of compounding effects, brand, should be controlled in this study. Finally, prior knowledge on digital cameras, general attitude toward online infomediaries, and general reference prices about digital cameras was measured by survey items in experiments, and they were used as control variables in an ANOVA analysis.

Dependent variable: Consumer product attitude indicates a consumers’ overall evaluation of persons, objects, and issues (Petty and Cacioppo, 1983, Petty and Wegener 1998). The items were constructed to find out consumer’s preference, satisfaction, and favorableness for digital cameras. Since online infomediaries scarcely sell products in their own business context, it is probable for consumer product attitude to be employed as a dependent variable. In the present study, product attitude was measured on a three seven-point Likert scale. Specific item are “The product is good/bad,” “The product is satisfactory/unsatisfactory,” and “The product is favorable/unfavorable,” where 1 indicates “strongly disagree” and 7 indicates “strongly agree.”

4 RESEARCH RESULTS

4.1 Manipulation Checks

To check the manipulation of product-information quality, we used the perceived information measure (Bailey and Pearson 1983; Negash et al., 2003; Srinivasan, 1985). The ANOVA analysis indicated that there are significant differences between the low-quality information condition and the high-quality information condition \[F(1,256)=63.126, \ p<0.001, \ M = 2.10 \text{ and } 3.22\]. The subjects also checked three items designed to check their perceptions of the level of price dispersion. These items refer to the perceived price dispersion measure (Srivastava and Lurie, 2001; Biswas et al., 2006). The ANOVA results show that price dispersion was also successfully manipulated \[F(1,256)=204.970, \ p<0.001, \ M = 3.21 \text{ and } 5.42\]. Then, as a check on the involvement manipulation, we used a recall score (Shavitt et al., 1994; Petty et al., 1980). Subjects were asked to check the correct functions provided by the online infomediary website among six attributes providing recall score. Using this method, involvement manipulation was manipulated successfully \[F(1,256)=45.553, \ p<0.001, \ M = 3.72 \text{ and } 4.30\].

4.2 Hypothesis Testing

The attitude toward the product was measured by three items which had a single factor (Cronbach’s \(\alpha =0.84\)). The mean value of these three items was used in following analyses and Table 3 presents the mean and standard deviation of dependent measures for each cell. The dependent measures were analyzed in a series of 2 (Product-information Quality) × 2 (Price Dispersion) × 2 (Involvement) ANCOVA. The ANCOVA results are in Table 4. The covariate variables were not significant. So,
exogenous factors were controlled successfully. The analysis indicated the presence of a significant main effect of the quality of product-information provided by the online infomediary \( [F(1,248)=56.238, p<0.001] \). It means that subjects with high quality product-information have more favourable attitude than those with low quality product-information. Therefore, Hypothesis 1 was accepted.

<table>
<thead>
<tr>
<th>Involvement</th>
<th>Low-Involvement</th>
<th>High-Involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Price Dispersion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>High</td>
<td>3.75 (0.73)</td>
<td>4.46 (0.62)</td>
</tr>
<tr>
<td></td>
<td>n=31</td>
<td>n=31</td>
</tr>
<tr>
<td>Low</td>
<td>3.59 (0.82)</td>
<td>4.10 (0.73)</td>
</tr>
<tr>
<td></td>
<td>n=38</td>
<td>n=31</td>
</tr>
</tbody>
</table>

Table 3. Descriptive statistics of Attitude toward Product

<table>
<thead>
<tr>
<th>Effect</th>
<th>F-value</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior Knowledge</td>
<td>0.003</td>
<td>0.955</td>
</tr>
<tr>
<td>General attitude toward online infomediary</td>
<td>1.018</td>
<td>0.314</td>
</tr>
<tr>
<td>General reference price of digital camera</td>
<td>1.825</td>
<td>0.178</td>
</tr>
<tr>
<td>Involvement</td>
<td>1.191</td>
<td>0.276</td>
</tr>
<tr>
<td>Price Dispersion</td>
<td>0.035</td>
<td>0.852</td>
</tr>
<tr>
<td>Product Information Quality</td>
<td>56.238***</td>
<td>0.001</td>
</tr>
<tr>
<td>Involvement ( \times ) Price Dispersion</td>
<td>48.067***</td>
<td>0.001</td>
</tr>
<tr>
<td>Involvement ( \times ) Product Information Quality</td>
<td>21.295***</td>
<td>0.001</td>
</tr>
<tr>
<td>Price Dispersion ( \times ) Product Information Quality</td>
<td>12.080***</td>
<td>0.001</td>
</tr>
<tr>
<td>Involvement ( \times ) Price Dispersion ( \times ) Product Information Quality</td>
<td>5.691**</td>
<td>0.018</td>
</tr>
</tbody>
</table>

*: p<0.1, **: p<0.05, ***: p<0.001

Table 4. ANCOVA test results

The quality of product-information \( \times \) involvement interaction \( [F(1,248)=21.295, p<0.001] \) reveals that the impact of quality on attitude is significantly greater under high rather than low-involvement conditions (see Figure 5 on the left). Thus, Hypothesis 2 was accepted. Likewise, the price dispersion involvement interaction \( [F(1,248)=48.067, p<0.001] \) was significant. The effect of price dispersion moves in different directions for the high-involvement condition and the low-involvement condition (see Figure 5 on the right). That is, high-involvement subjects under high price dispersion have an unfavorable attitude, but low-involvement subjects under high price dispersion have a favorable attitude. Thus, Hypotheses 3 and 4 are accepted.

We further explored the different effects of the manipulation of the quality of product-information and the price dispersion under low and high involvement conditions. Theses analyses were possible because the three-way interaction effect of the quality of product-information price dispersion involvement was significant \( [F(1,248)=5.691, p<0.01] \). For low-involvement subjects, only the main effect of price dispersion was significant \( [F(1,127)=22.370, p<0.001] \). These results support the ELM view that the impact of the quality of product-information on attitude under low-involvement did not differ. As the level of price dispersion increases, low-involvement consumers develop a much more favorable attitude irrespective of the quality of product-information (see Figure 6 on the left). Through these, we verified that low-involvement consumers mainly focus on the lowest price, which performs an anchoring point. Accordingly, Hypothesis 5 was accepted.
Under the high-involvement condition, all effects – the quality of product-information \( [F(1,123)=86.002, p<0.001] \), price dispersion \( [F(1,123)=28.334, p<0.001] \), the interaction of the quality of product-information and price dispersion \( [F(1,123)=20.042, p<0.001] \) – were significant (see Figure 6 on the right). Interestingly, two effects – the quality of product-information (positive) and price dispersion (negative) – on attitude toward product are in opposite directions. For high-involvement subjects under high quality product-information, the change of attitude toward the product by price dispersion did not differ \( [F(1,63)=0.318, p>0.5] \). For high-involvement subjects under low quality product-information, however, the effects of price dispersion was significant \( [F(1,60)=55.771, p<0.001] \). Such results might be interpreted as suggesting the possibility of a complementary relationship between the quality of product-information and price dispersion. We expect that for high-involvement consumers, an increase in price dispersion is considered a risky factor rather than an opportunity to buy the product cheaply, and this risk has a hedging-relation with an increase in the quality of product-information in individual information processing. Thus, Hypothesis 6 is accepted.

Three major findings emerge from the research described in this paper. First, the quality of product information provided by infomediary has a positive effect on attitude toward the product. Through this, we empirically verified the informational role of the infomediary. Second, the effects of price dispersion on a product can differ depending on consumer involvement. For low-involvement consumers, the price dispersion of the product positively affects consumer product attitude. But, under high-involvement condition, consumer product attitude was negatively affected by the price dispersion.

5 CONCLUSION AND LIMITATIONS

Three major findings emerge from the research described in this paper. First, the quality of product information provided by infomediary has a positive effect on attitude toward the product. Through this, we empirically verified the informational role of the infomediary. Second, the effects of price dispersion on a product can differ depending on consumer involvement. For low-involvement consumers, the price dispersion of the product positively affects consumer product attitude. But, under high-involvement condition, consumer product attitude was negatively affected by the price dispersion.
of the product. Third, this paper shows the significant price dispersion × involvement interaction effect. Low-involvement consumers are affected positively by the high-level of price dispersion rather than product information quality. High-involvement consumers, however, are affected negatively by the high-level of price dispersion. In this case, their expectations based on the heuristic cue (e.g., low-level of price dispersion is trustworthy) are not verified by subsequent processing of the product information (e.g., the quality of product information is also specific and good).

This study makes several contributions. First we found a moderator between the price dispersion and the quality of product information: involvement. This reasoning might give some food for thought along with lots of classical research in the e-commerce (Barki and Hartwick, 1989; 1994). Then, we suggested an underlying mechanism for the consumer product attitude to the price dispersion of the product. Applying elaboration likelihood model (ELM) to online infomediary context, we attempted to broaden the domain of applications of the model by demonstrating price dispersion, which proffers indirect evidence about attitude toward the product rather than the validity of product information, and can operate as a heuristic cue. And we found that the effects of this heuristic cue, price dispersion, on consumer product attitude have different effects depending on consumer involvement. Practically, this study’s major results emphasize the importance of properly managing online infomediary. Since price dispersion and information quality provided by online infomediary are differently processed depending consumer involvement, they can be used strategically as a new channel bridging consumers and online retailers.

The present study has several limitations. First, online retailers’ reputation was not considered. Since consumers do not have all reputational valuation toward online retailer and the distribution of online retailer with a product is hard to manipulate, but the effect of retailers’ reputation could be explained by additional experiment. Second, in this study, the quantity of price sets of product was fixed to avoid other effects. It could be possible that the quantity of price sets provided by infomediary can be a signal for the popularity of product. Further research considering this issue should be conducted. Finally, involvement was manipulated by differing consumers’ elaboration likelihood. Another factor such as consumers’ expertise can affect their elaboration. From this point of view, consumers’ expertise needs to be considered in the future study. In spite of these limitations, the result described in this study shows the effect of price dispersion in the online infomediary in company with several implications. Therefore, further study of online infomediary will be necessary to generalize through further studies.

References


Appendix

5.1  **Items (Seven-point Likert scale)**

5.1.1  *Product Information Quality (Cronbach’s alpha=0.91)*

The quality of product information is high.
The product information is sufficient.
The product information is helpful for understanding.

5.1.2  *Price Dispersion (Cronbach’s alpha=0.89)*

This digital camera is available in the infomediary for a wide variety of prices.
This digital camera is available in the infomediary for a wide range of prices.
The difference between the highest and lowest price of this camera is large.

5.1.3  *Involvement (Cronbach’s alpha=0.81)*

How much effort did you put into evaluating the product?
How involved were you in this task?
How much effort did you put into evaluating the given information?

5.1.4  *Attitude toward Product (Cronbach’s alpha=0.84)*

The product is good/bad.
The product is satisfactory / unsatisfactory.
The product is favourable / unfavorable.

5.1.5  *General attitude toward Infomediary (Cronbach’s alpha=0.84)*

When I buy a product online, I always use infomediary site.
When I buy a product online, infomediary site is helpful for my decision making.
When I buy a product online, infomediary site make me confident in purchasing the product.