

# Analyzing the Effect of Electronic Word of Mouth on Low Involvement Products

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## ABSTRACT

As social media are increasingly being used as a marketing platform, electronic word-of-mouth (eWOM) has also become popular in both research and business areas. However, although many studies have examined the effect of eWOM, the products investigated in most of these studies, such as films or books, are not likely to be consumed daily. Therefore, in this study, we analyze the effect of eWOM on low involvement products, which are inexpensive and enough for everyday spending. Given that low involvement products have unique characteristics such as low price, we conduct an experiment using a real sales dataset related to soft drinks. We also analyze the effect of eWOM in two social media platforms. We find that eWOM influences the sales of low involvement products, but such influence is dependent on the characteristic of the social media platform. Based on these results, we suggest that marketers and retailers selling low involvement products must consider eWOM, such as reviews, and differentiate their strategies based on their focused social media platform.

*Keywords:* Electronic Word of Mouth, eWOM, Low Involvement Product, Social Media, Online Review

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## I . Introduction

Due to the development of information technologies, social media become popular more and more. According to Holden-Bache (2011), more than 93% of B2B marketers are using social media to communicate with their customers. Moreover, investments in social media advertisements as a new

marketing tool have been increased. According to Alhidari et al. (2015), the worldwide investments on social media advertisements have been increased from \$11.36 billion in 2013 to \$23.6 billion in 2015. Although there are many reasons why social media marketing draws a lot of attentions, the main reason is that customers are trying to access the usage reviews from other customers through social media platform

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(Zhu and Zhang, 2010). Therefore, companies have considered social media platforms a new way of conveying the value of company's products or services and persuading potential consumers.

Customers are easily influenced by others' experiences or social atmospheres when they decide to purchase a product (Hennig-Thurau et al., 2004; Voss, 1984). In traditional marketing studies, this phenomenon is referred to Word of Mouth (WOM). WOM is defined as information transmission through face to face communications (Bone, 1995; Sen and Lerman, 2007). Through the interpersonal conversation, people share their experiences of the product or service. In addition, they change their attitudes toward the item based on others' experiences (Bloch et al., 1986; Bone, 1995; Feick and Price, 1987; López and Sicilia, 2014; Maeyer, 2012). Because people who share their experiences are regardless of commercial benefits, the information from WOM is deemed more credible and influential than firm-created information (Arndt, 1967; Grewal et al., 2003; Herr et al., 1991). Therefore, WOM can increase or decrease the sales of companies. Especially, information networks from the social media platforms provide new connections among its participants and allows reviews to flow through these connections (Aichner and Jacob, 2015; Ellison, 2007). That is, people are also sharing their experiences through social media platforms and these information sharing are called electronic Word of Mouth (eWOM).

With the rising of eWOM, researchers have been focusing on the effect of eWOM on the sales. For examples, Chevalier and Mayzlin (2006) and Gu et al. (2013) report that online reviews can influence the book sales. Also, box office sales are affected by the eWOM (Dellarocas et al., 2007; Duan et al., 2008; Liu, 2006). According to Gu et al. (2012), most studies related to eWOM reveal the effect of eWOM

on the sales of low involvement products such as books, movies, or music CDs. Low involvement products are lower priced and less important to the life than high involvement products. Moreover, in contrast to high involvement products, people are not carefully seeking information when they purchase low involvement products (Hansen et al., 1985; Richins and Bloch, 1986; Traylor, 1981). Therefore, many studies have pointed out that their purchase decisions to low involvement products are usually affected by unofficial information such as WOM or eWOM (Gu et al., 2012; Ratchford, 1987).

Although prior studies related to the effect of eWOM are well established, there are some limitations. First of all, products that are used in most of studies are books, movies, and so on. According to traditional marketing studies, low involvement products have some characteristics such as low price, repeat purchase, impulse buying, etc. However, there are some arguments that these products are not perfectly low involvement products. For example, people hardly watch movies repeatedly and change their preferences to the musician. In those cases, people are usually in need of searching specific information like actors in a movie or singers in a song. Therefore, in this study, we analyze the effect of eWOM on the soft drinks sales. Because soft drinks have low involvement product characteristics such as low prices and repetitive purchase, we can find the relation between eWOM and low involvement products sales. Second, most prior researches have used the ranks of products sales instead of sales transactional data. Because they assumed the negative relation between ranks and sales, they possibly hurt the reliability of the research though this assumption is handy (Chevalier and Mayzlin, 2006; Gu et al., 2012; Ye et al., 2009). To overcome this limitation, we use the transactional dataset that is obtained by

the grocery stores. Therefore, we can retain the reliability of our study. Lastly, the main focus of studies associated with the effect of eWOM is the product sales. However, eWOM is also affected by various factors. Although there are some factors, we first consider the social media platforms because the effect of eWOM can be vary with the platform. Therefore, we estimate the effect of eWOM in blog and online news platforms, which are regarded as representative social media platforms. In addition to these platforms, we also cope with the interaction effect of prices and brands. Although soft drinks are deemed typical low involvement products, we conduct additional experiments to estimate the interaction effects because they have various prices and brands.

Through the study, we find that eWOM effect on the low involvement product sales is existing in both platforms. Therefore, our study suggests that it becomes essential for the products vendors and retailers to manage the usage reviews in social media. Moreover, we find that the more reviews a product has, the more likely consumers are to purchase the beverage. With this result, we propose that companies have higher chance to meet increase in sales of a product if it, in social media, has sufficient posts regardless of attitude reviewers have. In contrast to the effect of eWOM, the interaction effects of prices and brands are different according to the characteristics of platforms. Namely, the interaction effect is changeable depending on the characteristics of the social media. Therefore, the companies that want to obtain the advantages of eWOM in social media should carefully contemplate what kind of characteristics their products have and where they are aimed at.

## II. Research Background and Hypotheses

### 2.1. Product Involvement

In traditional studies, the level of involvement for products is classified with high and low involvement and mainly defined with three concepts (Bosnjak and Rudolph, 2008; Ratchford, 1987). The first one is personal importance (Hansen et al., 1985; Richins and Bloch, 1986; Traylor, 1981). Generally, the personal importance has positive relationship with involvement. A customer's perceived significance for the product is consistent with his/her own values, interests and needs (Houston and Rothschild, 1978; Zaichkowsky, 1985). Some studies also argue that the importance of product for his or her life is critical factor for the involvement (Macias, 2003; Peter and Olson, 1987; Zaichkowsky, 1994). In other words, if a customer feels important in a product, he or she would consider it high involvement product. According to this concept, people frequently make a purchase of low involvement products without careful decision making, because they regard the products as not vital ones in their life.

Next one is costs, which mean the risks from wrong choices. In this concept, the higher the level of costs, the greater that of involvement is (Ratchford, 1987; Zaichkowsky, 1985). Some studies dealing with involvement use price and brand commitment of products as the cost factors (Ahmed et al., 2004; Gbadamosi, 2009). For instance, Zaichkowsky (1985) argued that product price is a decisive factor for the level of involvement. Ratchford (1987) also found that it would be classified into high involvement product if a product is expensive, because wrong choice leads to high costs and financial damages. In addition to price, brand commitment i.e., loyalty

for the product is considered an important factor of involvement (Jin and Koh, 1999; Zaichkowsky, 1985). Because people think that a brand reveals products' characteristic such as quality, the brand commitment can decrease invisible costs such as information processing and time used to seek right products (Celsi and Olson, 1988; Macdonald and Sharp, 2000; Mantel and Kardes, 1999; Mittal and Lee, 1989). Some studies pointed that people who buy low involvement products hardly give consideration to brand commitment because there is not much differentiation among the products, and then they are not at the risk in purchasing products. In contrast to the low involvement products, brand factor is the most effective one for high involvement products (Gbadamosi, 2009; Kuenzel and Musters, 2007; Radder and Huang, 2008). Moreover, as people are easy to buy low involvement products that are inexpensive and not crucial for their life, brand switching happens occasionally (Gbadamosi, 2009).

The last concept is efforts, which are associated with behaviors of searching information (Bloch et al., 1986; Clarke and Belk, 1979; Engel and Blackwell, 1982; Zaichkowsky, 1985). According to the prior research, efforts are positively involved in the involvement (Clarke and Belk, 1979; Engel and Blackwell, 1982). Especially, some studies argue that customers tend to seek substantial and detailed information when they purchase high involvement products. For instance, Petty et al. (1983) say that customers in need of high involvement products have tendency to hunt a great deal of and sophisticated information. Moreover, consumers look for all alternatives available and profoundly evaluate the expected results in order to buy them (Zaichkowsky, 1985). However, in case of low involvement products, easily accessible information such as friends' opinion or social atmosphere can have an impact on customers' behaviors

(Mitchell, 1979). Therefore, studies based on WOM and eWOM have focused on low involvement products because the level of involvement is determined by consumer's reaction to extrinsic stimulus and circumstance (Gbadamosi, 2009; Ha and Lennon, 2010; McGrath and Mahood, 2004; Zaichkowsky, 1985; Zaichkowsky, 1986).

Based on these concepts, we estimate the effect of eWOM on the sales of low involvement products. Although many studies have argued that customers are easily affected by eWOM when they make a purchase of low involvement products, their research domains such as books or movies are not actually fulfilled with concepts as mentioned above. Therefore, we conduct experiments using sales dataset of soft drinks, which are well-known as low involvement products. Moreover, in the perspective of costs, we also estimate the interaction effects of price and brand commitments.

## 2.2. eWOM

Electronic word-of-mouth (eWOM) is defined as online opinions and reviews regarding user experiences of products or service, and gives effects to the public no matter where they live (Hennig-Thurau et al., 2004; López and Sicilia, 2014). The influence of eWOM on customers can be explained by two effects (Liu, 2006). The first one is the awareness effect. Because the increase in the number of eWOM has made it easier for customers to be exposed to product-related information, they can be easily aware of the product (Duan et al., 2008; Jeong and Koo, 2015; Lee and Youn, 2009; Liu, 2006). Especially, Dellarocas et al. (2007) indicate that discussions on a product have made customers be familiar to it and people are more likely to put it in the choice set. Therefore, the increase of product-related in-

formation through eWOM influences the sales of the product (Chevalier and Mayzlin, 2006; Gu et al., 2013). The second one is the persuasiveness effect, which means that customers' opinions can be changed by eWOM (Chevalier and Mayzlin, 2006; Dellarocas et al., 2007). Some prior studies estimate the persuasiveness effect of eWOM through indicators such as valence or rating showing positive or negative opinion (Cadario, 2015; Duan et al., 2008; Ye et al., 2009). For instance, in digital camera category as a high involvement product, a valence indicator (average product rating of eWOM) as well as the volume of eWOM plays a meaningful role in predicting the sales (Gu et al., 2012). That is, customers think of both volume and valence of eWOM in purchasing the high involvement product. However, the valence indicator shows inconsistent significance in the low involvement products because they are inexpensive and not crucial to customers' life. For example, Duan et al. (2008) and Liu (2006) prove the eWOM effect on box office sales based on the volume and valence of reviews in the Yahoo!Movie website. They find that the volume has confidential positive effects, but the valence is not good for explaining the sales. Moreover, Dhar and Chang (2009) discover that the more blog reviews are posted, the better the products are sold in music CD sales. Therefore, as the volume of eWOM shows consistent results, we conclude that the awareness effect of eWOM is crucial in studying low involvement products. Although prior studies have indicated that the volume of eWOM influences the sales of low involvement products, the products in their studies such as movies, books, and music CDs are not enough to satisfy the low involvement criteria (Gu et al., 2012). For example, they are relatively bought irregularly and require customers' efforts to search information. Furthermore, they are inexpensive to

be consumed habitually. According to Simões and Agante (2014), the soft drinks can be the typical example of low involvement product, because they are inexpensive and regularly bought. Moreover, customers do not seriously assess and analyze their preferences when they make a purchase of soft drinks. Therefore, to estimate the effect of eWOM on sales, we use the soft drink sales data set.

Beside the volume of eWOM, the platform also influences the effect of eWOM. Recent studies have addressed social media as the platform of eWOM. According to Kaplan (2012), there are two kinds of contents in social media: User Generated Contents (UGC) and Firm Generated Contents (FGC). UGC in blog and Social Network Services (SNS) are based on sharing, networking and communication between users (Aichner and Jacob, 2015). Especially, blog has been pointed as an important platform in eWOM studies (López and Sicilia, 2014; Ma and Zhang, 2015). For instance, Gruhl et al. (2005) indicate that the volume of blog and the book sales in Amazon.com have positive relationships. Also, Dhar and Chang (2009) show that eWOM on blog has impacts on the music sales in Myspace. Compared with UGC, FGC are made by companies and considered a marketing activity (Kietzmann et al., 2011). Kumar et al. (2016) assert that FGC also influence the sales. Although companies have made contents on various platforms, online news is the typical example of FGC. According to You and Ju (2013), as the number of online news referring to the product is increased, customers are more reactive to the product. Moreover, Jeon (2008) indicates that customers react to the contents of online news regardless of the way of delivering information. Along with these prior studies, we divide social media into UGC (blog) and FGC (online news) and hypothesize:

*H1.A: Blog eWOM has an effect on low involvement products sales.*

*H1.B: News eWOM has an effect on low involvement products sales.*

Although prior studies indicate that the volume of blog and online news influence the sales, their effects can be different. In some studies, people feel more credible for contents from peer than from companies (Arndt, 1967; Grewal et al., 2003; Herr et al., 1991). Therefore, blog as UGC will have greater influences than online news as FGC. This discussion translates to the following hypothesis.

*H2: Blog eWOM is more influential on the low involvement products sales than News eWOM is.*

Even though we could find the effect of eWOM on the low involvement products in social media, the degree of effect would be moderated by the characteristic of products. For instance, according to Gu et al. (2013), the product popularity as the interactive term has positive moderating power on influence of eWOM volume for the book sales. Cui et al. (2012) also conduct the study for the sales of new products and find that eWOM effect is moderated by the products' life cycle and category. The main reason is that customers' perception of eWOM depends on the product characteristics. According to Pan and Zhang (2011), helpfulness of reviews is under influence of product types such as experiential or utilitarian goods. Also, Mudambi and Schuff (2010) find that it is influenced by search or experience goods. Especially, prior studies based on the low involvement products have addressed the effect of product price (Aaker, 1991; Ahmed et al., 2004; Chao, 1993; Johansson, 1989). As the low involvement products are inexpensive, lower price of the products could

lead higher sales. Moreover, the high priced items are not much affected by eWOM, because their customers seek more credible information such as experts' opinions. Therefore, we suggest following hypotheses that the price is negatively interactive with eWOM and this phenomenon would be same for both eWOM media.

*H3.A: As a price is higher, Blog eWOM effect is weaker.*

*H3.B: As a price is higher, News eWOM effect is weaker.*

Customers easily recognize the low involvement products through the brand, aside from the price (Ahmed et al., 2004; Keller, 2003; Radder and Huang, 2008). For instance, Dens and De Pelsmacker (2010) conclude that customers recognize candy by the brand not by the size or ingredients. With soft drinks, Simões and Agante (2014) also conclude that the brand awareness and familiarity have positive effects to customers' decisions although consumers do not have brand loyalty. Moreover, some studies indicate that the customers' brand awareness and familiarity are affected by the number of items consumers are facing (Carrillat et al., 2005; Radder and Huang, 2008). According to Musante (2006), if customers are familiar to the brand, they would buy product in the brand. In contrast, in case of non-familiar products, customers would be influenced by extrinsic information such as eWOM. Therefore, we make following hypotheses that the brand awareness would negatively moderate the eWOM effect regardless of social media platforms.

*H4.A: As brand awareness is higher, Blog eWOM effect is weaker.*

*H4.B: As brand awareness is higher, News eWOM effect is weaker.*

### III. Methodology

#### 3.1. Data

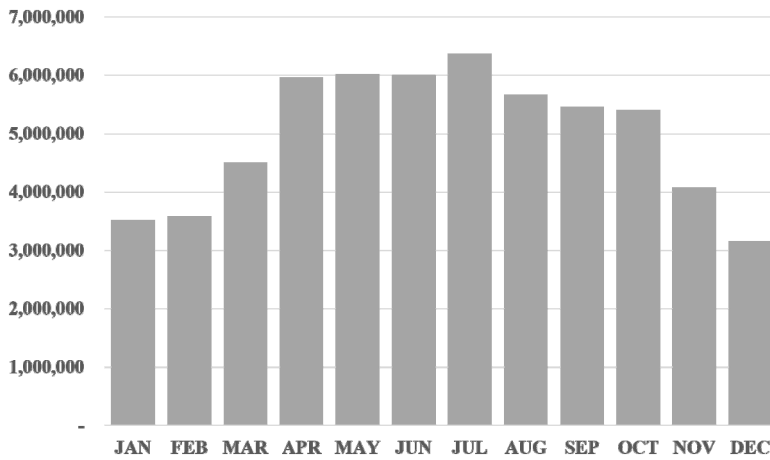
To test hypotheses, we first collect the soft drink sales data from in 2015 M-mart, a brick-and-mortar store chain in Korea. Our dataset contains 155 kinds of soft drinks with 69 brands. They are non-alcohol beverages such as coffee, dairy, fruit juice, soda or sports drinks. In contrast to movies and books that are more than \$10 each in general, beverages are low-priced, ordinary less than \$3 each. As they also have lower invisible costs, people can make a more repetitive purchase of soft drinks than they do of books or movies. Therefore, we conclude that soft drink category is more valuable for studying low involvement products. Also, we collect eWOM data from Naver, which has been the biggest Korean portal site and has provided both online news and blog services (Hong and Ahn, 2016). In addition, Naver, in which anyone can access to any information, has more extensive effects than other platforms in that such SNS platforms as Instagram, Facebook, and Kakao Story have limited effects on the public, because contents on the platforms are exposed to connected people, or accounts. Furthermore, there is no problem with a blog variable even in case of Power Bloggers in Naver, who have gotten popularity

with uploading a great number of contents popular. Due to the fact that there is an obvious sub-platform differentiation in Naver, blog users, or consumers, view the blog contents as user-generated contents, not as firm-generated contents, although some blog contents are supported by corporates. To estimate the daily volume of eWOM, we count the number of blog posts and news, both containing the brand and product names in the title. As there would be some noise data, we conduct data preprocessing. First, the brand name may be the same with common word such as “BARISTA”. In this case, we add the company name to the keyword. Next, users of blogs do not always use exact name of drinks in the titles. For example, they use “Binggrae Banana Milk” instead of “Binggrae Banana Flavored Milk”. Therefore, in case of blogs, we also add the names that are well known to customers. We employ panel data called cross-sectional and time-series data showing multiple periods with multiple individuals (Baltagi, 2008). <Table 1> represents a description of the key variables used in our study.

To estimate the effect of eWOM, this study uses the sales of a product at each day as a dependent variable. As we classify eWOM contents into blog and online news, two key independent variable are the number of blog posts and online news of a product at each day. As mentioned above, the number of

<Table 1> Description of Variables

Variables	Description	Source
$SALE_{it}$	Daily Sales of a product $i$ at $t$ th day	M-mart
$BLOG_{it}$	The number of blog posts for a product $i$ at $t$ th day	Naver
$NEWS_{it}$	The number of online news for a product $i$ at $t$ th day	Naver
$Price_{it}$	Price of product $i$ at $t$ th day	M-mart
$Brand_{it}$	The number of products in the brand of product $i$ at $t$ th day	M-mart
$Temp_t$	Average temperature at $t$ th day	KMA
$Rain_t$	Average precipitation rate at $t$ th day	KMA



<Figure 1> Monthly Sales Volume of M-mart (KRW)

eWOM of a product would influence the awareness of customers and the sales. On the other hand, because the low involvement products are inexpensive, customers are sensitive to the prices when they make a purchase. Also, customers who want to buy a higher priced one are less influenced by eWOM. Therefore, we use price variable as an interactive term. Moreover, customers who consider purchasing non-familiar product would be influenced by extrinsic information such as eWOM in the perspective of brand awareness that is affected by the number of items being exposed to customers. Thus, as another interactive term, we use brand variable estimated by the number of products in the brand of a product. Lastly, according to Chu et al. (2013), weather conditions primarily affect the sales of soft drinks. As shown in <Figure 1>, the sales of soft drinks in M-mart are highest at July. In contrast, the sales are low during winter season. Therefore, as control variables, we use two weather variables: temperature and precipitation obtained from Korea Meteorological Administration (KMA). As M-mart stores are of wide distribution, we collect weather data according to the metropolitan region of the stores.

### 3.2. Research Model

We use panel data to examine how the two types of social media influence the sales of products. The base equation for testing hypotheses is following as:

$$\ln(\text{SALE}_{it}) = \theta_1 \ln(\text{BLOG}_{it}) + \theta_2 \ln(\text{NEWS}_{it}) + \gamma_1 \ln(\text{Temp}_{it}) + \gamma_2 \ln(\text{Rain}_{it}) + (\alpha + u_i) + \varepsilon_{it} \quad (1)$$

where  $\ln(\text{SALE}_{it})$  represents the log of the sales volume (KRW) of product  $i$  at  $t$ th day. We denote the log of number of blog posts or online news at  $t$ th day as  $\ln(\text{BLOG}_{it})$  or  $\ln(\text{NEWS}_{it})$ . Although pooled OLS regression is typically used, it is not suitable when there is an individual effect  $u_i$ . Therefore, we use regression with random or fixed effect model. Random model has an advantage for higher degrees of freedom. However, it needs the assumption for  $u_i$  of no relationship with explanatory variables because it employs  $u_i$  as random error components and the model gets the problem causing endogeneity. Therefore, this study uses regressions with fixed effect model.

In addition to the base equation, we also estimate



the interactive effects of price and brand awareness. The following equation is used for the interactive effects.

$$\begin{aligned} \ln(\text{SALE}_{it}) = & \beta_1 \ln(\text{BLOG}_{it}) + \beta_2 \ln(\text{BLOG}_{it}) \\ & \times \ln(\text{Price}_{it}) + \beta_3 \ln(\text{BLOG}_{it}) \times \ln(\text{Brand}_{it}) \\ & + \beta_4 \ln(\text{NEWS}_{it}) + \beta_5 \ln(\text{NEWS}_{it}) \\ & \times \ln(\text{Price}_{it}) + \beta_6 \ln(\text{NEWS}_{it}) \times \ln(\text{Brand}_{it}) \\ & + \beta_7 \ln(\text{Price}_{it}) + \beta_8 \ln(\text{Brand}_{it}) + \gamma_1 \ln(\text{Temp}_{it}) \\ & + \gamma_2 \ln(\text{Rain}_{it}) + (\alpha + u_i) + \varepsilon_{it} \end{aligned} \quad (2)$$

However, these two models can cause endogeneity when we use variables at the same day. In our study, endogeneity is caused by dynamic relationship between eWOM and the sales amount. That is, the endogeneity occurs when eWOM has the effect on the sales amount and the sales amount also affects eWOM simultaneously. Also, it is incurred when some strong events would have the effects on both the sales amount and eWOM at the same time. To solve these problems, we use the 2SLS (2-Stage Least Squares) estimation method using time-lagged variables as instrumental variables (Angrist and Imbens, 1995). For the 2SLS, two assumptions should be met. The first one is that there is high relationship between original and instrumental variables. The other is that there is no relationship among residuals of the original regression (Bowden and Turkington, 1990). Based on these assumptions, in order to set up instrumental variables, this study first checks the relationship using time lags from  $t-7$ th day to  $t-1$ th day with 95% confidence level. The result of relation analysis is shown in <Table 2>.

As shown in Table 2, the number of blog posts and online news at  $t-1$ th day shows the highest relationships with the number of those at  $t$ th day. Therefore, according to the assumption of high relationship for instrumental variables, two variables,

<Table 2> Correlation Matrix between Time Lag

	BLOG <sub>t</sub>	NEWS <sub>t</sub>
<i>t</i>	1.00	1.00
<i>t-1</i>	<b>0.80</b>	<b>0.57</b>
<i>t-2</i>	0.78	0.42
<i>t-3</i>	0.77	0.39
<i>t-4</i>	0.77	0.36
<i>t-5</i>	0.77	0.35
<i>t-6</i>	0.77	0.36
<i>t-7</i>	0.77	0.37

the number of blog posts and online news at  $t-1$ th day, are appropriate. Furthermore, we test the fitness of instrumental variables based on Durbin-Wu-Hausman test (Hausman and Taylor, 1981). As a result, instrumental variables are needed for solving endogeneity (BLOG eWOM: 0.0000, NEWS eWOM: 0.0007). Therefore, with instrumental variables, we can remove a dynamic relationship and reduce a common factor problem. After considering instrumental variables, we estimate the correlation between variables based on Pearson method and results are shown in <Table 3>.

Moreover, VIF coefficients of independent variables are ranged from 1.02 to 1.14. These are low enough not to cause a multicollinearity problem (Kutner et al., 2004). Therefore, according to <Table 3> and VIF test, we can conclude that the variables are appropriate to be put into this study.

In order to validate the model, we conduct various tests for Equation (1) and (2). Results are shown in <Table 4>. First, we conduct F-test to assess which model is more suitable between pooled OLS and fixed effect model. As a result, fixed effect model is chosen as an appropriate model for both equations. Second, based on the result of Breusch-Pagan Lagrange Multiplier (BPLM), we find that random effect model is more suitable than pooled OLS. Through these

<Table 3> Variables Correlation Matrix

	SALE <sub>it</sub>	BLOG <sub>it</sub>	NEWS <sub>it</sub>	Price <sub>it</sub>	Brand <sub>it</sub>	Temp <sub>t</sub>	Rain <sub>t</sub>
SALE <sub>it</sub>	1						
BLOG <sub>it</sub>	.110***	1					
NEWS <sub>it</sub>	.095***	.303***	1				
Price <sub>it</sub>	-.097***	-.052***	.066***	1			
Brand <sub>it</sub>	.025***	-.012***	.154***	.210***	1		
Temp <sub>t</sub>	.121***	.077***	.007 <sup>†</sup>	.006	.000***	1	
Rain <sub>t</sub>	.010**	.009**	-.004	.001	.000***	.138***	1

Note: \* $p < 0.1$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$

<Table 4> Model Validation

	Equation (1)	Equation (2)
F-test	$F=90.103^{***}$	$F=80.225^{***}$
BPLM test	$\chi^2=374.030^{***}$	$\chi^2=297.630^{***}$
Hausman test	$\chi^2=20.012^{***}$	$\chi^2=48.989^{***}$

Note: \* $p < 0.1$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$

two results, we can prove that individual effect is present in at least one product. Lastly, we conduct Hausman test to choose the right one between fixed and random effect model. As a result, fixed effect model is picked out as the proper one.

#### IV. Experimental Results

This paper is to test the eWOM effect on the sales of low involvement products, using 2SLS regression with fixed effect model. <Table 5> shows the results of testing hypotheses in our research. According to Column (1) of <Table 5>, blog and news eWOM have the effect on the sales of products at 95% and 99% confidence level respectively. Therefore, as an increase of eWOM leads to the sales of products, we can accept hypotheses 1.A and 1.B. Moreover, we can test hypothesis 2 by comparing

coefficients between  $\ln(\text{BLOG})$  and  $\ln(\text{NEWS})$ . In constructing the hypothesis 2, we expected that blog contents have more effects on product sales than those of news have, because consumers feel more credibility from peer on blog than on news. However, the result shows that news eWOM (0.290) is more influential than blog eWOM (0.088) on sales of the product with the p-value of 0.0000 from F-test in a group. The result means that UGC has higher credibility from viewers than FGC, but FGC has higher power to influence on recognizing the product and inducing purchase behaviors of consumers. Therefore, hypothesis 2 is rejected.

Second, as shown in Column (2) of <Table 5>, the effects of both eWOM are maintained, even including price and brand awareness variables. That is, blog and news eWOM have their own effects on the sales of low involvement products. Moreover, we also find that the price variable significantly has

<Table 5> 2SLS Regression Results

Dependent Variable: ln(SALE)	(1)	(2)	(3)	(4)	(5)
	eWOM	Interactive variables	Price	Brand	ALL
ln(BLOG)	0.088** (0.039)	0.096** (0.025)	1.530*** (0.000)	0.663*** (0.000)	1.637*** (0.000)
ln(BLOG)×ln(Price)			-0.199*** (0.000)		-0.146*** (0.007)
ln(BLOG)×ln(Brand)				-0.395*** (0.000)	-0.334*** (0.000)
ln(NEWS)	0.290*** (0.000)	0.289*** (0.000)	1.857 (0.219)	0.508* (0.092)	1.593 (0.322)
ln(NEWS)×ln(Price)			-0.215 (0.297)		-0.168 (0.482)
ln(NEWS)×ln(Brand)				-0.137 (0.442)	-0.053 (0.792)
ln(Price)		-2.222** (0.012)	-1.947** (0.028)		-1.819** (0.041)
ln(Brand)		-3.962 (0.631)		-4.128 (0.618)	-4.115 (0.617)
ln(Temp)	0.832*** (0.000)	0.842*** (0.000)	0.843*** (0.000)	0.831*** (0.000)	0.841*** (0.000)
ln(Rain)	-0.027* (0.081)	-0.027* (0.088)	-0.027* (0.082)	-0.027* (0.086)	-0.027* (0.083)
adj. R <sup>2</sup>	22.14	22.15	22.17	22.17	22.19
N	56110	56110	56110	56110	56110

Note: \* $p < 0.1$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$

the negative effect on the sales. Therefore, we conclude that low priced products are likely to be bought by customers who want to buy the low involvement products such as soft drinks.

Third, in this study, we also discover that the effects of eWOM on the sales would be differentiated depending on price and brand awareness as the characteristics of the products. In other words, we assumed that the characteristics have impacts on eWOM effects by hypotheses 3.A, 3.B, 4.A, and 4.B. As a result of moderating effects of price and brand

awareness, Column (3) and (4) show that blog eWOM effects are only moderated from price and brand awareness with 99% significant level. Moreover, the increases of price and brand awareness decrease blog eWOM effects on the sales of low involvement products. Therefore, we can only accept hypotheses 3.A and 4.A. These results have some meanings. First, customers are easily influenced by the blog reviews in consuming the low priced ones. Namely, the effects of blog eWOM are stronger for lower priced products. Next, consumption behaviors are tended to get neg-

ative effect of blog reviews if a soft drink is included in famous brand. That is, if customers face the new blog reviews for unknown products, they will buy.

Last, we use all variables to test firmness of eWOM and moderating effects. According to Column (5), as all results are close to each other, it is appropriate to say that these five regressions are consistent.

## V. Conclusion

In this study, we find the effects of eWOM on the low involvement product sales. Our experiments show eWOM effects on the sales, but the extents are varying by the characteristics of the products. Therefore, we can conclude that customers' buying decisions are influenced by both user-generated blog reviews and firm-generated news. However, their powers are different in that news power is greater than blog one. Furthermore, blog eWOM effects are moderated by price and brand awareness each, whereas news eWOM effects are not. Price and brand awareness values have negative interactive effects to blog eWOM respectively. Through these results, we find that blog eWOM effects are bigger in low-priced products. As customers who consider buying high-priced products have significant preferences, they don't tend to get effects from blog reviews. Thus, brand awareness acts like price. The main reason is that customers don't need to exploit blog reviews when they know of famous brand.

Based on these results, we suggest some implications of this study. First, although eWOM effect studies have addressed the low involvement products, they have used the infrequently purchased ones such as films or books. These products have the limitations in the sense that they are costly to be spent on a daily basis and customers should search some in-

formation for them. Therefore, eWOM effects may stay alive. Through our study, we find that eWOM effects also exist in the regularly purchased products with low prices such as soft drinks. Our findings prove that eWOM effect is validated even in trivial products and online reviews are powerful for sales of the products. Second, our study concentrates on the volume of eWOM. Although we do not put the attitude of eWOM into our research, experimental results show that the volume of eWOM positively influences the sales. According to prior studies, customers are more likely to be affected by the number of reviews rather than meaning of the eWOM in case of book and film categories (Park et al., 2007). Therefore, we suggest that companies can raise sales of their products by increasing the number of online contents regardless of attitude of the contents even in the beverage category, a low involvement product category. Lastly, we divide the eWOM contents into blog as the user-generated contents and online news as the firm-generated ones, and reflect the traits of products such as price and brand awareness. Especially, we find that the effects of blog eWOM are moderated by price and brand awareness. Through these results, we suggest that companies need to consider the social media marketing when they want to increase the sales of low-priced and unknown brand products. Consequently, we expect that our study will be beneficial for companies, because we provide some strategies for eWOM marketing subject to the characteristics of the low involvement products.

## Acknowledgment

This work was supported by a grant from Kyung Hee University in 2013.(KHU-20130525)

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Submitted: May 19, 2017; 1st Revision: September 20, 2017; Accepted: September 21, 2017