



저작자표시-비영리-변경금지 2.0 대한민국

이용자는 아래의 조건을 따르는 경우에 한하여 자유롭게

- 이 저작물을 복제, 배포, 전송, 전시, 공연 및 방송할 수 있습니다.

다음과 같은 조건을 따라야 합니다:



저작자표시. 귀하는 원저작자를 표시하여야 합니다.



비영리. 귀하는 이 저작물을 영리 목적으로 이용할 수 없습니다.



변경금지. 귀하는 이 저작물을 개작, 변형 또는 가공할 수 없습니다.

- 귀하는, 이 저작물의 재이용이나 배포의 경우, 이 저작물에 적용된 이용허락조건을 명확하게 나타내어야 합니다.
- 저작권자로부터 별도의 허가를 받으면 이러한 조건들은 적용되지 않습니다.

저작권법에 따른 이용자의 권리는 위의 내용에 의하여 영향을 받지 않습니다.

이것은 [이용허락규약\(Legal Code\)](#)을 이해하기 쉽게 요약한 것입니다.

[Disclaimer](#)

경영학석사학위논문

Synergy Effect between WOM Generation and Consumption:

-An Empirical Study on Laptop and
Biscuit Product Category-

구전생성과 소비의 시너지 효과 관한연구:
노트북과 과자 중심으로

2015년 8월

서울대학교 대학원

경영학과 경영학전공

YAN JINZHE

Synergy Effect between WOM Generation and Consumption:

-An Empirical Study on Laptop and

Biscuit Product Category-

지도교수 송인성

이 논문을 경영학석사 학위논문으로 제출함

2015년 6월

서울대학교 대학원

경영학과 경영학전공

YAN JINZHE

YAN JINZHE의 경영학석사 학위논문을 인준함

2015년 7월

위원장 김 병 도 (인)

부위원장 이 유 재 (인)

위원 송 인 성 (인)

Abstract

Synergy Effect between WOM Generation and Consumption:

**-An Empirical Study on Laptop and Biscuit Product
Category-**

YAN JINZHE

College of Business Administration

The Graduate school

Seoul National University

Word-of-Mouth (WOM), as one of the most effective communication methods with influence on consumer decisions through product transmission, has drawn widespread attention by a large number of academic researchers and marketers in recent years. Arndt (1967) defines WOM as: “Oral, person-to-person communication between a perceived non-commercial communicator and a receiver concerning a brand, a product, or a service offered for sale.” In contrast to research regarding effects of WOM, there has been less contribution to WOM consumption or usage. This research intends to investigate whether a consumer is able to generate WOM to others and whether the consumer can use WOM for making purchasing decisions. The research utilizes two unique sets of data collected from

two different product categories, including laptop and biscuit. The discrete choice model to study consumer WOM generation and consumption decisions is fundamentally based on Yang's model (2012). Particularly, the research interests lie in studying the synergy effects between the two WOM relating activities, and the key drivers of WOM generation and consumption. This research mainly adopts aforementioned Yang's model to analyze data, which were collected from the laptop and biscuit product categories. Also, we do find strong synergy effect between WOM generation and consumption. Moreover, it shows that the synergy effect on laptop is higher than that on biscuit between each WOM generation and consumption. Additionally, consumer product experience and media exposure are proved to have an effect on the propensity to generate and consume WOM. Above all, these findings lead to important managerial implications on targeting for effective use of WOM as a marketing tool.

Keywords: Word-of-Mouth, Product Category, Discrete-Choice-Model, Synergy Effects.

Student Number: 2013-23795

Contents

Abstract	i
1. Introduction	1
2. Literature Review and Conceptual Framework	4
2.1 Word of Mouth (WOM)	4
2.2 Synergy Effect between WOM Generation and Consumption	6
2.3 Product Experience	7
2.4 Media Exposure	8
2.5 Conceptual Framework	9
3. Model Description	11
4. Data Description	15
5. Estimation Results	22
6. Managerial Implication	27
7. Conclusion and Discussion	28
8. Reference	30
국문초록	38

List of Table

Table 1	Variable Definition	20
Table 2	Summary Statistics.....	21
Table 3	Estimate of the Synergy Effect.....	23
Table 4	Estimates in the WOM Consumption Equation.....	25
Table 5	Estimates in the WOM Generation Equation	26

List of Figure

Figure 1	Conceptual Framework.....	10
Figure 2	Descriptive Statistics: Respondents	15
Figure 3	Descriptive Statistics: WOM-1.....	17
Figure 4	Descriptive Statistics: WOM-2.....	18
Figure 5	Estimate of the Synergy Effect.....	23

1. Introduction

How many friends of yours watched a movie because of your recommendation?

How many people buy a new product introduced by a friend? This persuasive and influential process has a more specific name, known by us as Word-of -Mouth (WOM). WOM has attracted increasing attention by a large number of academic researchers and marketers' attention as one of the most effective communication in influencing consumer decisions through product information transmission, related purchasing and product consumption. WOM suggestions recommended by friends and family members are considered as earned advertising which are influencing in general. Statistics from Nielsen online survey indicates that 84 percent of global respondents from 58 countries expressed the reliability of this kind of source.¹ Some researches concerning the importance of WOM shows that it is a primary factor in making purchase decision (Leonard-Barton, 1985; Price and Feick, 1984; Richins, 1993; Gieses et.al 1996), and it has a substantial impact on evaluating product and making purchase decisions (Brown and Reingen, 1987; Price and Feick 1984).

In order to make WOM effective, WOM generation (passing the information to others) and WOM Consumption (consuming WOM for making purchase decisions) need to work simultaneously (Yang et al., 2012). Most academic researchers mainly focused on the aggregate level of WOM. Comparing with research about

¹ Nielsen Company(2013), Global Trust in Advertising and Brand Messages(2013). Report, Nielsen, New York. <http://www.nielsen.com/us/en/insights/reports/2013/global-trust-in-advertising-and-brand-messages.html>

effects of WOM, there has been less attention to WOM consumption or usage (Yang et al., 2012). However, WOM consumption plays a noteworthy role in promoting the flow of information and also affecting product diffusion and sales (Berger and Schwartz, 2011; Yang et al., 2012). The combination factor in relation to WOM generation and consumption determines the ultimate success of WOM. Therefore, it is necessary to study the fundamental drivers of WOM generation and consumption.

Besides, it seems interesting as well to understand the positive synergy effect between WOM generation and consumption. Yang et al. (2012) initially tried to examine such interdependent relationship between WOM generation and consumption. In comparison with the case when synergy effect is negative, there is higher possibility of a single individual generating and consuming WOM when synergy effect is positive. It is therefore desirable for companies to target those with high intensity of and positive synergy between the WOM generation and consumption in their managing WOM.

Furthermore, it is critical to understand the difference between the WOM generation and consumption and their synergy effect at different product categories. The previous research examines the automobile product category, but it would be useful to understand how product characteristics explain the difference on the synergy effect between WOM generation and consumption. In order to analyze and demonstrate product characteristics' potential impact on synergy effect, this research is conducted into two sets of data.

The discrete choice model to study consumer WOM generation and consumption

decisions is fundamentally based on Yang's model. In light of Yang's model, consumer decisions can be modeled jointly on WOM generation and consumption. Meanwhile, the potential synergy effect between the two activities can also be demonstrated. Hence, as a preference, it is more likely for a firm to target those with high intensity and positive synergy along with the WOM generation and consumption when managing their WOM.

In this paper, we utilize two survey-based data sets on the laptop and biscuit category to empirically examine the following issues: (1) is there any synergy effect between WOM generation and consumption? If yes, what is the different synergy effect pattern in two different product categories? (2) How do consumer product experiences and media-usage habits have an effect on WOM generation and consumption after controlling for interdependence between the two WOM activities?

The paper contains 7 sections. In section 2, a literature review and conceptual framework will be presented. After that, the econometric model is posted in section 3 in order to capture the interdependence/synergy of WOM generation and consumption. Section 4 will depict data information. Next, an application of the proposed model to the laptop and biscuit category and findings are provided in section 5. Then the managerial implications will be discussed in section 6. Lastly, conclusion, research limitation and direction of further study in future are illustrated in section 7.

2. Literature Review and Conceptual Framework

2.1 Word of Mouth (WOM)

WOM is commonly regarded as a primary factor for business as well as it has become the object of academic research for a long time (Jacob, 2000). Arndt (1967) defines WOM as: “Oral, person-to-person communication between a perceived non-commercial communicator and a receiver concerning a brand, a product, or a service offered for sale.” There are two main subjects of research about WOM. The first one focuses on the WOM consumption or usage. Researchers tried to understand how consumer behavior changed by WOM. Hu defines the WOM consumption as “People actually use WOM in their decisions, which means, the more the WOM generation, the bigger the impact which would have on sales.”(Hu, 2012, p-6). The other one stressed on WOM generation.

As to the first school of literature studies, it was agreed by research that WOM acts as independent variable and contributions have been made to investigating its consequences: WOM has an obvious effect on sales (Leskovec, Adamic, and Huberman 2007), products the adoption (Trusov, Bucklin, and Pauwels 2009), customer patronage to restaurants (Godes and Mayzlin 2009). There are a great deal of previous studies that have examined the relationship between consumer product reviews and product sales. Some researches reveal that WOM and volume of product sales have positive relationship. For example, it is showed by Chen et al. (2007) reviews, as a more helpful factor, seem to have a greater influence on

retailer sales. Duan et al. (2009) suggest that WOM has a more significant impact on less popular products than popular products. However, several researches failed to find a statistically remarkable relationship indeed (Duan et al. 2005, Liu 2006). As far as most of these researchers concerned, using reviews as a proxy of WOM should have prerequisite presuming these product reviews actually used by consumer (Hu 2012). Other than most of the mentioned studies before, we directly measure consumer WOM generation and consumption through survey data, which method applied to WOM research by Yang et al. in 2012.

In differently, the second school of literature treats WOM as an outcome and dedications have been made to research the drivers of WOM communication. One line of study mainly focuses on the effect of social structure on WOM. The results reveal that WOM generation may differ from one another, as its consequences are subject to the person who is talking to whom (Yang et al. 2012).

The relationship between WOM and tie strength has been analyzed by Wirtz & Chew (2002) already and it is indicated that there is a positive correlation between tie strength and WOM transmission. Another line of study examined which factors affect WOM generation. Richins (1983) identified various factors that trigger negative WOM, such as failure to handle complaints appropriately, or inefficient product repair services. Swan and Oliver (1989) demonstrated it is more likely for satisfied purchasers for a new car to transmit positive WOM to others. File et al. (1992) showed that gratification with the service delivery process leads to more positive WOM. Berger and Schwartz (2011) examines psychological drivers of direct and continuous WOM. It is believed that more interesting products are able

to get more direct WOM, but do not receive more ongoing WOM over several month or as a whole (Berger and Schwartz ,2011). Yang et al. (2012) modeled consumer simultaneous decisions of WOM generation and consumption while capturing the synergy effect between two WOM related activities. In this research, we are going to adopt the Yang's view.

2.2 Synergy Effect between WOM Generation and Consumption

Previous research suggests that opinion leadership should be associated with opinion seeking (Katz and Lazarsfeld 1955, Wright and Cantor 1967), which may indicate a synergy effect between WOM generation and consumption. Originally, Yang et al. (2012) formally examine the interdependent/synergy relationship between WOM generation and consumption. It has been found that there is a strong synergy between WOM generation and consumption. The synergy effect could be either positive or negative. In the case of positive synergy effect, the utility form engaging in both WOM generation and consumption is higher than the sum of utilities form generation or consuming WOM respectively². In this situation, consumers regard the WOM generation and consumption as complements. Therefore, generating WOM increases consuming WOM. On the other hand, the synergy effect between the related two WOM activities could be negative. In this case, utility form engaging both two activities is lower than utilities form

² "Utility" is used in the language of random utility models, not necessarily anything accruing to, or experienced by, consumers.

generating and consumption alone. In other words, consumers view the two WOM activities as partial substitutes. Hence, generating WOM will reduce consuming WOM and vice versa.

In consist with previous research conducted by Yang et al. (2012), we assume that there is a synergy effect between WOM generation and consumption, holding consumer product experience, media exposure, and unobservable factors as constant. In terms of positive synergy, WOM generation and consumption will reinforce each other. While WOM generation and consumption will undermine each other.

2.3 Product Experience

There is strong evidence that consumers are found of sharing their product and service experience from one to others through WOM (Gaby A et al. 2010). According to Keller (2007), on average American generates 120 WOM conversations per week. On the basis of Yang et al. (2012)'s research, product experience can play a crucial role in illuminating consumer reactions to WOM. Yang et al. (2012) demonstrates that more experiences with product indicates two things: One is that the person has more knowledge about the product category (Yang et al. 2012, Triantafillidou and Siomkos 2014). The other one is that the consumer has a higher interest in the product category (Hu 2012). On the WOM generation side, consumer with more product experience perceived as more product category knowledge and interest, hence leading to a higher possibility for engaging in WOM in this product category. Sundaram et al. (1998) indicates that

motives on generating WOM are significantly related to the consumption experiences. On the side of WOM consumption, previous studies research on information seeking suggests different results. On the one hand, some authors found a negative relationship between product experience and information search (e.g., Anderson et al. 1979). Therefore, more knowledge may reduce the consumer need for WOM and reduce the WOM consume. On the other hand, more knowledge, and higher relevance or product interest, could lead to more WOM consumption. A few studies on consumer behavior show that prior knowledge encourages an information search by allowing the individual to form more questions and help their evaluate the responses to those questions, thus reducing the cognitive cost of using information and increasing the benefit of obtaining information (Jacoby et al. 1978).

2.4 Media Exposure

Media exposure is defined by Schultz and Lauterborul (1993) as “any opportunity for a reader, viewer, or listener to see or hear an advertising message in a certain media vehicle”. It is found in recent research from Nielsen, the most influential driver of new produce consciousness in-store discovery (72%), and followed by TV (59%) and print(54%) advertising respectively.³ Product

³ Nielsen Company(2013), A MULTI-MIX MEDIA APPROACH DRIVES NEW PRODUCT AWARENESS, Report, Nielsn, New York. <http://www.nielsen.com/us/en/insights/news/2013/a-multi-mix-media-approach-drives-new-product-awareness.html>

demonstrations are widely found in television commercials, while a brand image can be established and information can be communicated in depth through print advertisements. Besides, product packaging tends to be fully used to attract consumer's interests by the time of product sales procedure. All the above are mentioned in *Advertising and promotion: An integrated marketing communications perspective* (Belch & Belch 1995).

Qader et al (2011) demonstrates that media exposure has a significant positive influence on the consumer's purchase intentions. Moreover, Stefano et al. (2014) demonstrates that social media exposure intensifies WOM. Hence, customers can get a plenty of product information through mass media in the high media exposure context. For instance, if a customer who watches TV or uses other mass media such as newspaper, magazine and internet regularly, the customer can make himself well acquainted with the product category. In this case, consumer's need for WOM consumption is in the decline, while the WOM generation need get a rise (Yang et al., 2012). Therefore, our hypothesis is in line with Yang et al.(2012) that the media exposure level is negatively related with the consumer possibility of WOM consumption and positively associated with the consumer probability of WOM generation in that category.

2.5 Conceptual Framework

In our research, we model consumer simultaneous decision of WOM generation and consumption while capturing the synergy effect between the two activities. The

conceptual framework of this research can be clearly presented in Figure 1 presents and it is a summary of our critical content.

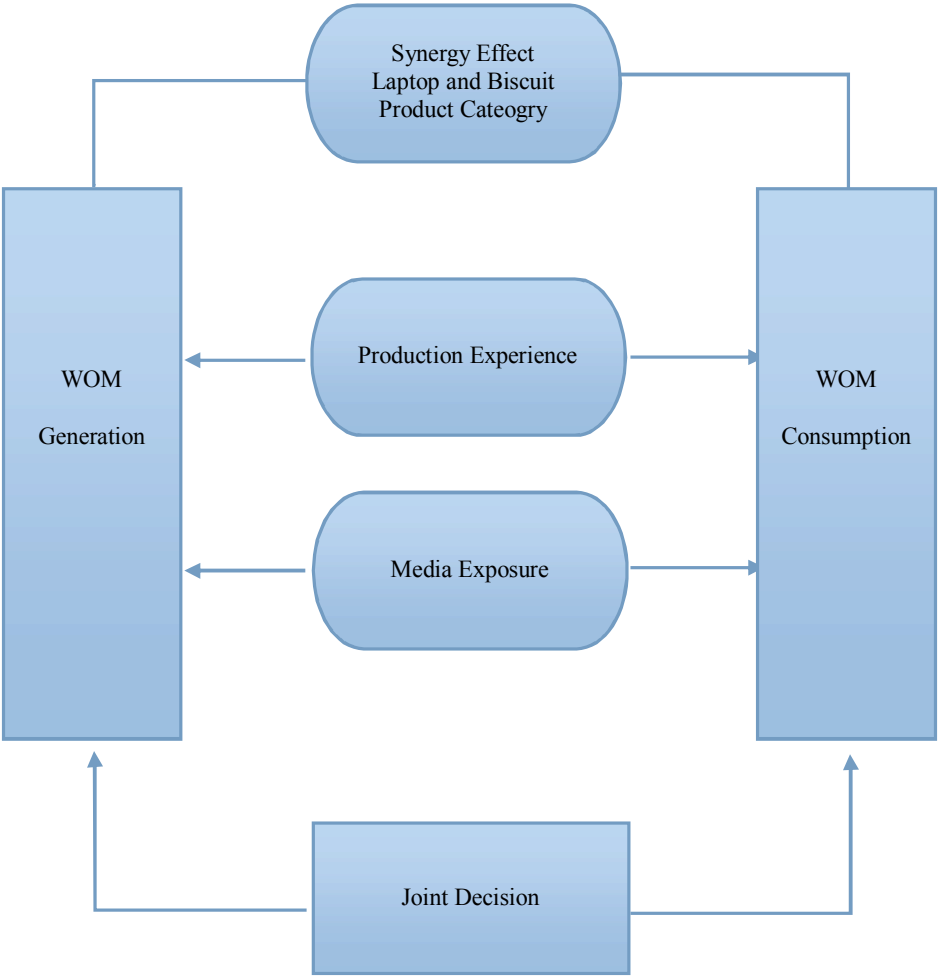


Figure 1 Conceptual Framework

3. Model Description

In this research, the discrete choice model to study consumer WOM generation and consumption decisions is fundamentally based on Yang's model. The research defines the model as logit model. In line with previous study, we presume that the individual maximizes the joint utility from WOM generation and consumption in the sense that WOM generation and consumption are two important activities in relation to an individual's social tendency with respect to information. This connection may suggest a process for consumers to make a joint decision on whether to generate and use WOM or not. Therefore, customer will choose the highest utility from four possible decision outcomes.

We also assume that the synergy effect appears in the joint utility when consumer engages in and consumes WOM at the same time.

We observe information on whether consumer i passes WOM to others and whether consumer i uses WOM in making a purchase decision for the same product category. There are four possible outcomes: (1) consumer generates and uses WOM denotes $(Y_i^G = 1, Y_i^C = 1)$, (2) consumer generates but does not use WOM $(Y_i^G = 1, Y_i^C = 0)$, (3) consumer does not generate but use WOM $(Y_i^G = 0, Y_i^C = 1)$, and (4) consumer neither generates nor uses WOM $(Y_i^G = 0, Y_i^C = 0)$.

We can write the joint utility of WOM generation and consumption as follows:

$$U(Y_i^G, Y_i^C) = (X_i \beta^G)Y_i^G + (X_i \beta^C)Y_i^C + \theta Y_i^G Y_i^C + \varepsilon(Y_i^G Y_i^C) \quad (1)$$

where:

U: joint utility of WOM generation and consumption,

$X_i \beta^G$: the intrinsic utility form WOM generation,

$X_i \beta^C$: the intrinsic utility from WOM consumption.

θ : the extrinsic utility form WOM generation and consumption.

The joint utilities associated with the four outcomes for person i are

$$\mathbf{U}(Y_i^G = 1, Y_i^C = 1) = X_i \beta^G + X_i \beta^C + \theta + \varepsilon_{i1} \quad (2)$$

$$\mathbf{U}(Y_i^G = 1, Y_i^C = 0) = X_i \beta^G + \varepsilon_{i2} \quad (3)$$

$$\mathbf{U}(Y_i^G = 0, Y_i^C = 1) = X_i \beta^C + \varepsilon_{i3} \quad (4)$$

$$\mathbf{U}(Y_i^G = 0, Y_i^C = 0) = \varepsilon_{i4} \quad (5)$$

where X_i includes an intercept, a vector of variables measuring consumer i 's product category experience and a vector of variables measuring consumer i 's media exposure. θ stands for the synergy effect between WOM generation and WOM consumption, as error term ε s are capturing the random of four decision outcomes respectively.

Next step, we set model for capturing the synergy effect θ . We rewrite Equations (2)-(5) as following,

$$\mathbf{U}(Y_i^G = 1, Y_i^C = 1) = \beta_0^G + \beta_0^C + X_i \beta^G + X_i \beta^C + \theta + \varepsilon_{i1} \quad (6)$$

$$\mathbf{U}(Y_i^G = 1, Y_i^C = 0) = \beta_0^G + X_i \beta^G + \varepsilon_{i2} \quad (7)$$

$$\mathbf{U}(Y_i^G = 0, Y_i^C = 1) = \beta_0^C + X_i \beta^C + \varepsilon_{i3} \quad (8)$$

$$\mathbf{U}(Y_i^G = 0, Y_i^C = 0) = \varepsilon_{i4} \quad (9)$$

where X_i includes a vector of variables measuring consumer i 's product category experience and a vector of variables measuring consumer i 's media exposure. In light of four possible decision outcomes, we are able to identify three

intercepts in the discrete-choice model setting. Setting neither WOM generation nor consumption as the baseline, we presume the utility is 0. Observations of $(Y_i^G = 1, Y_i^C = 0)$ allow us to identify the intercept of the WOM generation utility in equation (7), β_0^G . Similarly, observations of $(Y_i^G = 0, Y_i^C = 1)$ allow us to identify the intercept of the WOM generation utility in (8), β_0^C . Next, observations of $(Y_i^G = 1, Y_i^C = 1)$ allow us to identify the intercept in the WOM generation utility in (7), β_0^G . Finally, observations of $(Y_i^G = 0, Y_i^C = 1)$ allow us to identify the intercept in the joint utility of WOM generation and consumption in Equation (6), which is the sum of β_0^G, β_0^C and θ . Given that β_0^G and β_0^C are uniquely identified through Equations (7) and (8), the synergy measure θ can be uniquely identified through Equation (6).

Defining $P_i(Y_i^G, Y_i^C)$ indicating the probability of observing consumer i 's decision on WOM generation and consumption, we can obtain $P_i(Y_i^G, Y_i^C)$ through equation (10)-(13).

$$P_i(\mathbf{1}, \mathbf{1}) = \frac{e^{\beta_0^G + \beta_0^C + X_i \beta^G + X_i \beta^C + \theta}}{e^{\beta_0^G + \beta_0^C + X_i \beta^G + X_i \beta^C + \theta} + e^{\beta_0^G + X_i \beta^G} + e^{\beta_0^C + X_i \beta^C} + 1} \quad (10)$$

$$P_i(\mathbf{1}, \mathbf{0}) = \frac{e^{\beta_0^G + X_i \beta^G}}{e^{\beta_0^G + \beta_0^C + X_i \beta^G + X_i \beta^C + \theta} + e^{\beta_0^G + X_i \beta^G} + e^{\beta_0^C + X_i \beta^C} + 1} \quad (11)$$

$$P_i(\mathbf{0}, \mathbf{1}) = \frac{e^{\beta_0^C + X_i \beta^C}}{e^{\beta_0^G + \beta_0^C + X_i \beta^G + X_i \beta^C + \theta} + e^{\beta_0^G + X_i \beta^G} + e^{\beta_0^C + X_i \beta^C} + 1} \quad (12)$$

$$P_i(\mathbf{0}, \mathbf{0}) = \frac{1}{e^{\beta_0^G + \beta_0^C + X_i \beta^G + X_i \beta^C + \theta} + e^{\beta_0^G + X_i \beta^G} + e^{\beta_0^C + X_i \beta^C} + 1} \quad (13)$$

We can write down the probability of observing individual i 's observed decision out come as:

$$f_i = P_i(\mathbf{1}, \mathbf{1})^{Y_i^G Y_i^C} P_i(\mathbf{1}, \mathbf{0})^{Y_i^G (1 - Y_i^C)} P_i(\mathbf{0}, \mathbf{1})^{(1 - Y_i^G) Y_i^C} P_i(\mathbf{0}, \mathbf{0})^{(1 - Y_i^G) (1 - Y_i^C)} \quad (14)$$

The log-likelihood function can be wrote down as

$$L(\boldsymbol{\beta}^G, \boldsymbol{\beta}^C, \boldsymbol{\beta}_0^G, \boldsymbol{\beta}_0^C, \boldsymbol{\theta}) = \sum_i \ln(f_i) \quad (15)$$

In this research, we apply the quasi-newton method to maximize the log-likelihood function. We use the BFGS algorithm to approximate the Hessian matrix.

4. Data Description

We mainly obtained the cross-sectional survey data from a national survey company that collects information in Korea on consumer buying behavior and attitudes. Spanning one year, we collected the data from April 2014 to April 2015. Approximate 700 respondents participated in our consumer behavior survey.

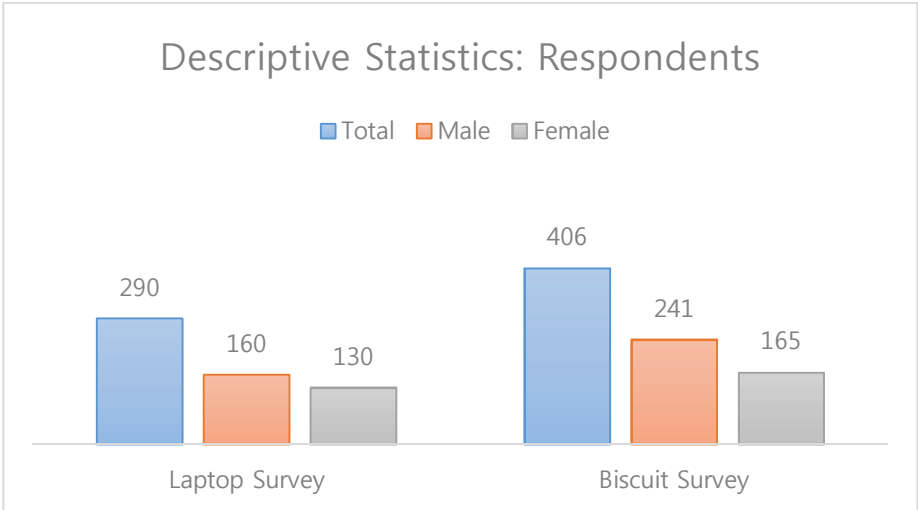


Figure 2 Descriptive Statistics: Respondents

Regarding laptop, there were 290 respondents in total, among which 55% were male while 45% were female, and 58.9% of them are married. The average education level of these 291 respondents is above vocational college yet lower than

university (as manifested by number 5.365); and the average income level of them is around 2.4 million ~ 3.6 million Korean won (as showed by number 3.8) (see Figure 1 and Table 2).

In terms of biscuit, there were 406 respondents, among which 59% were male and 41% were female, and 59.1% are married. The average education level of these 406 respondents is above vocational college yet lower than university (as manifested by number 5.394); and the average income level of them is around 2.4 million Korean won (as showed by number 2.953) (see Figure 1 and Table 2).

The survey was designed to ask respondents whether they used WOM in purpose of making purchase decisions and whether they passed recommendation to others as WOM generation. In order to pick up credible consumer samples, we asked customers to select all the products that they had bought, including “air cleaner, laptop, cellphone and N/A” and “can coffee, soft drink, shampoo, biscuit and N/A”. Then, only the respondents who chose laptop or biscuit were allowed to further respond the survey.

For laptop, we find that the probability of WOM generation (0.87) is higher than probability of WOM consumption (0.83). Among the 290 respondents, 0.77 both generate and consume WOM, and about 7% of respondents do neither. About 0.06 generate and but do not consume WOM, only 0.10 of them consume but do not generate WOM (see Figure 2&3 and Table 2). The correlation between WOM generation and consumption is positive (0.379, $p\text{-value} < 0.00$), which sheds some light on the synergy effect between two.

For biscuit, we find that the probability of WOM generation (0.69) is higher than

probability of WOM consumption (0.62). Among the 406 respondents, 0.536 both generate and consume WOM, and about 21% of respondents do neither. About 0.167 generate and but do not consume WOM, only 0.09 of them consume but do not generate WOM (see Figure 2 &3 and Table 2). The correlation between WOM generation and consumption is positive (0.434, p-value<0.00), which sheds some light on the synergy effect between two.

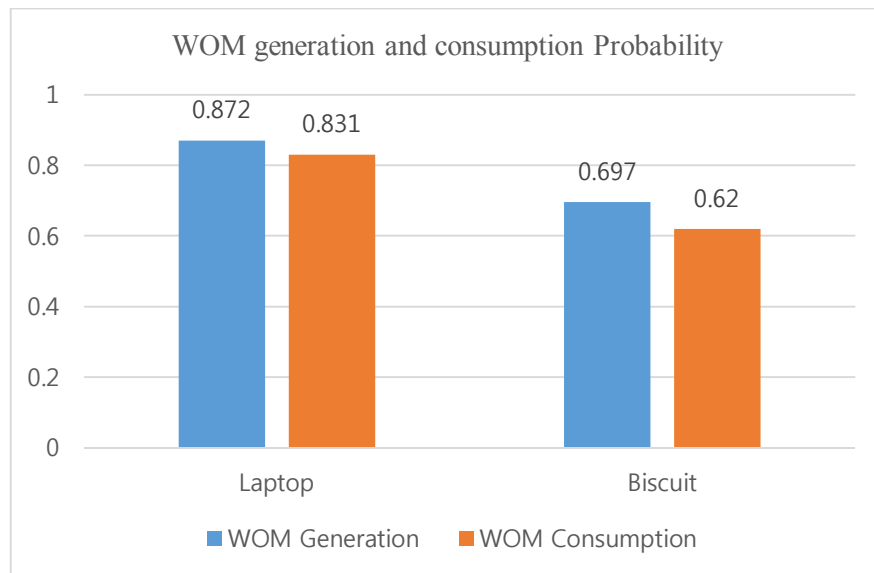


Figure 3 Descriptive Statistics: WOM-1

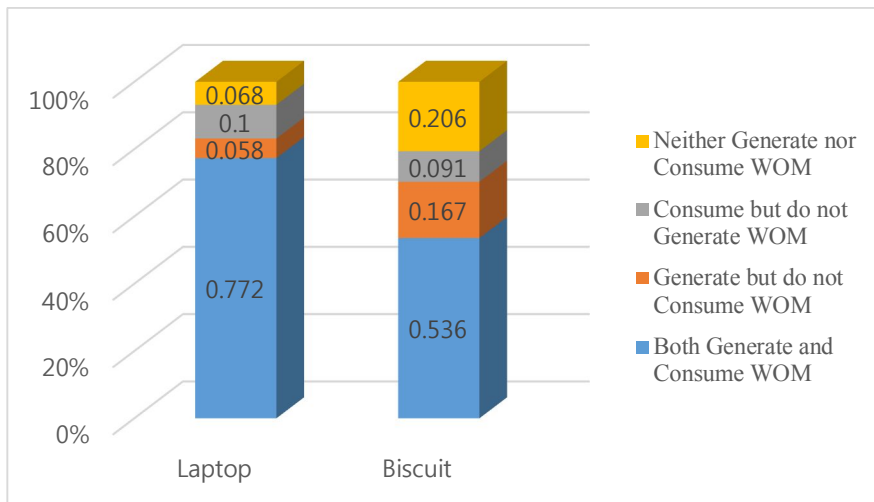


Figure 4 Descriptive Statistics: WOM-2

WOM generation is a binary variable measuring whether the customer conveys any WOM to others. WOM consumption is a binary variable measuring whether the customer used when making purchasing decision. The WOM can include consumers' experience with certain brand or product features. In addition, it also contains information on product experience, media exposure, demographics and places where products were purchased.

There are a variety of variables proved to have an effect on WOM generation and consumption regarding product experience, for instance, whether the respondent is a first-time buyer, how often the respondent uses the product, and how many laptop or biscuits they purchased before. Additionally, media's influence such as print newspaper or magazine, television and the Internet, is also proved to

be of critical importance while formulating and consuming WOM. Moreover, consumer demographics contain gender, age, education, income and marital status. The aforementioned variables are manifested in Table 1. Meanwhile, the summary statistics are reported in Table 2.

Although the cross-sectional data have its limitation, the data are unique and valuable due to two reasons. First of all, we measure the WOM generation and consumption from the same consumers. Second, compared to many prior studies on the relationship of product reviews and aggregate seals at the aggregate level, our data provide an accurate measure on WOM consumption.

We explored several variants of proposed model based on the following specifications: (1) the proposed model in which we presume consumer maximization of the joint utility from WOM generation and consumption. (2) incorporating the synergy effect versus presuming it to be 0.

To avoid estimating too many parameters, we adopt the linearization specification on all multiple-level categorical predictors instead of dummy coding observation.

Table 1 Variable Definition

Variable Type	Variable	Definition	Measures	
			Laptop	Biscuits
WOM Generation	WOM Generation	Whether passed WOM to others	Yes=1, no=0	
WOM Consumption	WOM Consumption	Whether used WOM in purchase decision	Yes=1, no=0	
Product Experience	Fist time	Whether the product is the first bought	Yes=1, no=0	
	Usage	Laptop: Average week/hours used Biscuit: Average week times bought	1= 1 or less 2= 1~4hours 3= 5~8 hours 4= 9-12 5= 13-16 6= 17-20 7= 21-24	1= 1 or less 2= 2 3= 3 4= 4 5= 5 6= 6 7= 7
	Quantity	Laptop: Quantity Biscuit: Consumption Quantity	The Actual Number	
Media	Print	Frequency of reading newspapers and magazines	1= None 2= 1 time per week 3= 2 times per week 4= 3 times per week 5= 4 times per week 6= 5 times per week 7= 6 times per week 8= 7 times per week	
	Television	Frequency of watching TV		
	Internet	Frequency of using Internet		
Demographics	Gender	Gender	Male=1, Female=0	
	Age	Age	Age/10	
	Education	Highest Level of Education	1= Incomplete primary education 2= primary education Completed 3= Secondary Education Completed. 4= High School Education Completed. 5= 2~3 Collage Education Completed 6= University Degree 7= Master Degree or Above.	
	Income	Individual Income Level	1= 1,200,000 or less 2= 1,200,000~2,400,000 3= 2,400,000~3,600,000 4= 3,600,000~4,800,000 5= 4,800,000~6,000,000 6= 6,000,000~7,200,000 7= 7,200,000+	
	Married	Marital Status	Married=1, single=0	
Channel	Shop	Whether bought the product at Laptop: Dealer Biscuit: Super market	Yes=1, No=0	

Table 2 Summary Statistics

Variables type	Variable	Laptop		Biscuit	
		Mean	S.D	Mean	S.D
WOM Generation	WOM Generation	0.872	0.334	0.697	0.460
WOM Consumption	WOM Consumption	0.831	0.375	0.620	0.486
	$Y^G = 1, Y^C = 1$	0.772	0.419	0.536	0.499
	$Y^G = 1, Y^C = 0$	0.058	0.235	0.167	0.373
	$Y^G = 0, Y^C = 1$	0.100	0.300	0.091	0.288
	$Y^G = 0, Y^C = 0$	0.068	0.253	0.206	0.405
Product experience	Fist time	0.341	0.479	0.236	0.425
	Usage	2.451	0.944	1.783	1.166
	Quantity	1.668	0.730	2.67	1.609
Media exposure	Print	3.500	1.270	3.041	1.585
	Television	4.503	1.436	4.544	1.585
	Internet	5.596	1.250	6.105	1.562
Demographics	Gender	0.551	0.498	0.593	0.632
	Age	3.424	1.139	3.353	1.079
	Education	5.365	1.318	5.394	1.080
	Income	3.800	1.819	2.953	1.755
	Married	0.589	0.492	0.591	0.502
Channel	Shop/Supermarket	0.582	0.500	0.514	0.500

5. Estimation Results

Synergy Effect between WOM generation consumption Estimation

First, the most significant contribution of our research is the detection of the synergy effect between WOM generation and WOM consumption (see Table 3). Our empirical study has examined two product categories' synergy effect between WOM generation and consumption. For both laptop and biscuit product category, the synergy effect between WOM generation and WOM consumption is positive, which suggests that the two activities are complementary and the utility of engaging in both activities is higher than the sum of the utility of engaging in only one single aspect. It is more desirable for individual to generate WOM when they consume WOM, because WOM consumption helps accumulate related product knowledge. When the knowledge on products accumulates to certain level, WOM can be generated. In the meantime, consuming WOM is more desirable when the individual also generates WOM, perhaps because the individual expects their own WOM generation to be reciprocated and they are able to enjoy more of their future WOM consumption.

Most important finding is that synergy effect between WOM generation and consumption on laptop product category is higher than that of biscuit product category. The finding indicates that the utility of engaging in both activities on laptop is higher than that of biscuit category. Consumers are more likely to generate and consumption WOM simultaneously when they buying laptop than when they considering to purchase biscuit.

Table 3 Estimate of the Synergy Effect

	Estimate	S.E
Laptop	2.66	0.471
Biscuit	1.938	0.255

Note. Bold estimates are the ones that are significant at the 5% level.

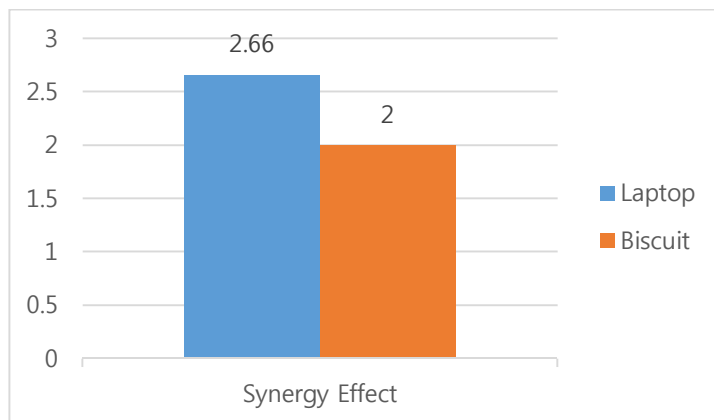


Figure 5 Estimate of the Synergy Effect

WOM Consumption Estimation

Next, we discuss our findings on WOM consumption (see Table.4).

For laptop analysis, it is noticed that for the first-time buyers, it is more likely to consume WOM, which is in consistent with the hypothesis that limited product knowledge may lead to a stronger consumer need for WOM in order to do help when making purchasing decisions. As well, we discover that consume quantity has a positive effect on WOM consumption. Above all, more product experience makes it easier to process new information and may also signal a higher consumer's interests in the product, thus can be leading to a higher propensity to information search and WOM consumption.

For biscuit analysis, it is proved that consume quantity has a positive effect on WOM consumption. Above all, more product experience makes it easier to process new information and may also evoke a higher consumer's interests in the product, thus can be leading to a higher propensity to information search and WOM consumption. Hence, in consistent with our expectations, consumer product experience is positively correlated with their WOM generation propensity. As to the effect of media exposure, we detect that there is a negative relationship between internet usage and WOM consumption. This could be due to the Internet's interactive environment and the rapid development of online social communities where product reviews and recommendations concerning WOM are widely available. And therefore it can to some extent increase the consumer probabilities of WOM consumption.

Table 4 Estimates in the WOM Consumption Equation

		Laptop		Biscuit	
		Estimate	S.E	Estimate	S.E
	Intercept	-3.35	1.18	-1.07	0.59
Product	First Time	2.477	0.573	0.238	0.304
Experience	Usage	-0.216	0.186	0.114	0.120
	Quantity	0.680	0.297	0.413	0.109
Media	Print	0.113	0.148	0.089	0.079
Exposure	Television	0.060	0.133	0.107	0.065
	Internet	0.193	0.15	-0.180	0.080

Note. Bold estimates are the ones that are significant at the 5% level..

WOM Generation Estimation

Lastly, we will discuss our findings on WOM generation (see Table.5).

For laptop analysis, it is found that first time buyer are less likely to generate WOM. For biscuit analysis, consumer product experience is positively correlated with their WOM generation propensity in the sense that the first-time buyers do not usually possess full understanding of products, so that they are less likely to generate WOM. Moreover, we find that WOM generation is positively correlated with consumer media exposure. Specifically, consumers who watch TV are easy apt to generate WOM.

Table 5 Estimates in the WOM Generation Equation

		Laptop		Biscuit	
		Estimate	S.E	Estimate	S.E
	Intercept	-0.121	1.21	-1.49	0.536
Product Experience	First Time	-1.03	0.477	0.362	0.275
	Usage	0.338	0.234	0.390	0.102
	Quantity	-0.011	0.30	-0.013	0.070
Media Exposure	Print	-0.015	0.166	-0.024	0.073
	Television	0.118	0.143	0.128	0.061
	Internet	-0.121	0.164	0.033	0.074

Note. Bold estimates are the ones that are significant at the 5% level..

6. Managerial Implication

From the above empirical analysis, what we found is that there is positive synergy effect between WOM generation and consumption evidenced by both laptop and biscuit product categories. Considering that participation in one activity may encourage participation in the other, WOM generation and consumption can be used by a complementary manner in consumer preference. Synergy effect between WOM generation and consumption on laptop product category is higher than that of biscuit product category. All the above findings can be widely applied in laptop and biscuit companies when managing WOM communication.

It is necessary for companies to simulate either WOM consumption or generation in order to incite another one due to the intertwined correlations between both of the factors. Hence, WOM campaign can be widely encouraged to make consumers not only generate but also consume WOM. It is not only beneficial to consumer's decision, also helpful to companies. Furthermore, purchasing experience and various information exposure can stimulate WOM generation and consumption as well.

7. Conclusion and Discussion

In order to make WOM as an effective marketing tool, it is necessary and critical to get a deep understanding of synergy effect between WOM generation and consumption, and the factors that drive WOM generation and consumption. In this paper, we investigated these important issues by applying a model to account for such interdependent/synergy effects between WOM generation and consumption.

This research was fundamentally based on the aforementioned model to survey data on the laptop and biscuit product categories. The estimated results revealed that consumer product experience and media exposure have magnificent impact on WOM activities in both laptop and biscuit category.

Besides, we also acknowledged that there is a strong synergy effect between WOM generation and WOM consumption. For both laptop and biscuit product category, the synergy effect between WOM generation and WOM consumption is positive, which suggests that the two activities are complementary and the utility of engaging in both activities is higher than the sum of the utility of engaging in only one single aspect. This finding has critical managerial implications to laptop and biscuit companies. Based on this finding, a viable targeting strategy would be to seek those active WOM consumers and generators with a positive synergy effect in order to achieve a more effective communication through WOM.

However, this article has its limitation and the findings are only a starting point for further study. In this article, in order to give a clear explanation of product involvement affecting the WOM generation and consumption behaviors, we are

trying to examine two categories of products using the econometric model which is proposed by Yang et al (2012). However, it is admitted that our empirical study is limited in two categories of products. The necessity of product diversity concerning high involvement and low involvement is highly appreciated when further analyzing the relationship between product involvement and WOM generation and consumption. On one hand, from the WOM generation point of view, it is more likely for customers with high product involvement (VS. Low), considerably product knowledge and professional, to influence other people's behavior. Thus, high product involvement increases the likelihood of generation of WOM. On the other hand, from WOM consumption point of view, customer with high product involvement has more interest to search for product information with the purpose of making purchase decision, thus leading to higher likelihood of consumption WOM in this category. It is beneficial for a company to make full use of the synergy effect of WOM generation and consumption in both high and low products involvement. And therefore, companies are encouraged to manage their WOM activities effectively and efficiently

Meanwhile, this paper has its limitation in terms of data collection and questionnaire design. Cross-sectional data collection has flaws in the sense that respondents' answers are more too often subjective. Furthermore, according to the key paper this research mainly referred to, the design of this questionnaire needs to be improved.

8. Reference

Arndt, J. (1967). Role of product-related conversations in the diffusion of a new product. *Journal of marketing Research*, 291-295.

Arndt J 1967. Word of Mouth Advertising: A Review of the Literature. Advertising Research Foundation.

Anderson, E. W. (1998). Customer satisfaction and word of mouth. *Journal of service research*, 1(1), 5-17.

Berger, J., & Schwartz, E. M. (2011). What drives immediate and ongoing word of mouth? *Journal of marketing research*, 48(5), 869-880.

Beatty, S. E., Homer, P., & Kahle, L. R. (1988). The involvement—commitment model: Theory and implications. *Journal of Business research*, 16(2), 149-167.

Belch, G. E., & Belch, M. A. (2003). *Advertising and promotion: An integrated marketing communications perspective*. The McGraw– Hill.

Moliner-Velazquez, B., & Fuentes Blasco, M. (2012). Why do restaurant customers engage in negative word-of-mouth?. *Esic Market Economic and Business Journal*, 43(2), 259-280.

Chevalier, J. A., & Mayzlin, D. (2006). The effect of word of mouth on sales: Online book reviews. *Journal of marketing research*, 43(3), 345-354.

Desmet, P., & Hekkert, P. (2007). Framework of product experience. *International*

journal of design, 1 (1) 2007.

Dellarocas, C., Zhang, X. M., & Awad, N. F. (2007). Exploring the value of online product reviews in forecasting sales: The case of motion pictures. *Journal of Interactive marketing, 21(4), 23-45.*

Duan, W., Gu, B., & Whinston, A. B. (2009). Informational cascades and software adoption on the internet: an empirical investigation. *Mis Quarterly, 23-48.*

East, R., Uncles, M. D., Romaniuk, J., & Hand, C. (2014). The decay of positive and negative word of mouth after product experience. *Australasian Marketing Journal (AMJ), 22(4), 350-355.*

File, K. M., & Prince, R. A. (1992). Positive word-of-mouth: customer satisfaction and buyer behaviour. *International Journal of Bank Marketing, 10(1), 25-29.*

Fitzgerald Bone, P. (1992). Determinants of Word-Of-Mouth Communications: During Product Consumption. *Advances in consumer research, 19(1).*

Fei Xue, Peiqin Zhou (2011), "The Effects of Product Involvement and Prior Experience on Chinese Consumer's Responses to Online Word of Mouth". *Journal of International Consumer Marketing, 23:45-58,2011.*

Frenzen, J., & Nakamoto, K. (1993). Structure, cooperation, and the flow of market information. *Journal of Consumer Research, 360-375.*

Giese, J. L., Spangenberg, E. R., & Crowley, A. E. (1996). Effects of product-specific word-of-mouth communication on product category involvement.

Marketing Letters, 7(2), 187-199.

Godes, D., & Mayzlin, D. (2009). Firm-created word-of-mouth communication: Evidence from a field test. *Marketing Science*, 28(4), 721-739.

Godes, David and Dina Mayzlin (2004), "Using Online Conversations to Study Word-of-Mouth Communication," *Marketing Science*, 23 (4), 545–60.

Greene, W. H., & Hensher, D. A. (2003). A latent class model for discrete choice analysis: contrasts with mixed logit. *Transportation Research Part B: Methodological*, 37(8), 681-698.

Gu, B., Park, J., & Konana, P. (2012). Research Note—The Impact of External Word-of-Mouth Sources on Retailer Sales of High-Involvement Products. *Information Systems Research*, 23(1), 182-196. doi: 10.1287/isre.1100.0343

Guadagni, P. M., & Little, J. D. (1983). A logit model of brand choice calibrated on scanner data. *Marketing science*, 2(3), 203-238.

Hensher, D. A., & Greene, W. H. (2003). The mixed logit model: the state of practice. *Transportation*, 30(2), 133-176.

Herr, Paul M., Frank R. Kardes, and John Kim (1991) . "Effects of word-of-mouth and product-attribute information on persuasion: An accessibility-diagnostics perspective." *Journal of consumer research* (1991): 454-462.

Hoch, S. J. (2002). Product experience is seductive. *Journal of Consumer Research*,

29(3), 448-454.

Hu, M. M. (2012). *Word-of-Mouth, Social Learning and Network Effects as Mechanisms of Social Contagion*. New York University, Graduate School of Business Administration.

Jacoby J, Chestnut RW, Fischer WA (1978) . A behavioral approach in non-durable purchasing. *J. Marketing Res.* (1978) 15(4):532–544.

Join, A. C. R., Grans, A. C. R., & Listserv, A. C. R. (1988). The role of involvement and opinion leadership in consumer word-of-mouth: An implicit model made explicit. *Advances in consumer research*, 15, 32-36.

Katz, Elihu, and Paul Felix Lazarsfeld (1955) . *Personal Influence, The part played by people in the flow of mass communications*. Transaction Publishers, 1955.

Kamakura, W. A., & Russell, G. (1989). A probabilistic choice model for market segmentation and elasticity structure. *Journal of marketing research*, 26, 379-390.

Kim, Hyekyoung (2014) . "The role of WOM and dynamic capability in B2B transactions." *Journal of Research in Interactive Marketing* 8.2: 84-101.

Kietzmann, Jan, and Ana Canhoto. "Bittersweet! understanding and managing electronic word of mouth." *Journal of Public Affairs* 13.2 (2013): 146-159.

Kotler, P., Keller, K. L., & Bliemel, F. (2007). *Marketing-management: Strategien für wertschaffendes Handeln*. Pearson Studium.

Leskovec, J., McGlohon, M., Faloutsos, C., Glance, N. S., & Hurst, M. (2007, April). Patterns of Cascading behavior in large blog graphs. In *SDM* (Vol. 7, pp. 551-556).

Liu(2006), Word of Mouth for Movies: Its Dynamics and Impact on Box Office Revenue, *Journal of Marketing*, 70 (July) (2006), pp. 74–89

McLachlan, G., & Peel, D. (2004). Finite mixture models: *John Wiley & Sons*.

Moliner Velázquez, B., & Fuentes Blasco, M. (2012). Why do restaurant customers engage in negative word-of-mouth? *Esic Market Economic and Business Journal*, 43(2), 259-280.

Moliner-Velazquez, B., & Fuentes Blasco, M. (2012). Why do restaurant customers engage in negative word-of-mouth?. *Esic Market Economic and Business Journal*, 43(2), 259-280.

Nielsen Company(2013), A MULTI-MIX MEDIA APPROACH DRIVES NEW PRODUCT AWARENESS, Report, Nielsn, New York.: <http://www.nielsen.com/us/en/insights/news/2013/a-multi-mix-media-approach-drives-new-product-awareness.html>.

Nielsen Company(2013), Global Trust in Advertising and Brand Messages(2013). Report, Nielsn, New York. <http://www.nielsen.com/us/en/insights/reports/2013/global-trust-in-advertising-and-brand-messages.html>

Ntale, P. D., Ngoma, M., & Musiime, A. (2013). Relationship marketing, word of mouth communication and consumer loyalty in the Ugandan mobile telecommunication industry. *African Journal of Business Management*, 7(5), 354-359.

Oliver, R. L., & Swan, J. E. (1989). Consumer perceptions of interpersonal equity and satisfaction in transactions: a field survey approach. *The Journal of Marketing*, 21-35.

Oppenheimer, A. (2005). From experience: products talking to people—conversation closes the gap between products and consumers. *Journal of Product Innovation Management*, 22(1), 82-91.

Pace, S., Balboni, B., & Gistri, G. (2014). The effects of social media on brand attitude and WOM during a brand crisis: Evidences from the Barilla case. *Journal of Marketing Communications*, 1-14. doi: 10.1080/13527266.2014.966478

Qader, I. K. A., & Zainuddin, Y. B. (2011). The impact of media exposure on intention to purchase green electronic products amongst lecturers. *International Journal of Business and Management*, 6(3), p240..

Tejavibulya, P., & Eiamkanchanalai, S. (2011). The impacts of opinion leaders towards purchase decision engineering under different types of product involvement. *Systems Engineering Procedia*, 2, 12-22.

Richins, M. L. (1983). Negative word-of-mouth by dissatisfied consumers: A pilot study. *The journal of marketing*, 68-78.

Ruggiero, Thomas E.(2000) "Uses and gratifications theory in the 21st century."
Mass communication & society : 3-37.

Schellekens, G. A., Verlegh, P. W., & Smidts, A. (2010). Language abstraction in word of mouth. *Journal of Consumer Research*, 37(2), 207-223.

Schultz, D. E., Tannenbaum, S. I., & Lauterborn, R. F. (1993). Integrated marketing communication: Pulling it together and making it work. *IL: NTC*.

Sørensen, E., Grunert, K. G., & Nielsen, N. A. (1996). The impact of product experience, product involvement and verbal processing style on cognitive structure as measured by the laddering method. In *25th EMAC Conference, Budapest, May*.

Sundaram, D. S., Mitra, K., & Webster, C. (1998). Word-of-mouth communications: A motivational analysis. *Advances in consumer research*, 25(1), 527-531.

Tejavibulya, P., & Eiamkanchanalai, S. (2011). The Impacts of Opinion Leaders towards Purchase Decision Engineering under Different Types of Product Involvement. *Systems Engineering Procedia*, 2, 12-22.

Train, K. (2002). Discrete Choice Methods with Simulation. *Cambridge University Press*.

Triantafillidou, A., & Siomkos, G. (2014). Consumption experience outcomes: satisfaction, nostalgia intensity, word-of-mouth communication and behavioural intentions. *Journal of Consumer Marketing*, 31(6/7), 526-540.

Trusov, M., Bucklin, R. E., & Pauwels, K. (2009). Effects of word-of-mouth versus traditional marketing: findings from an internet social networking site. *Journal of marketing*, 73(5), 90-102.

Thomas E. Ruggiero (2000) Uses and Gratifications Theory in the 21st Century, *Mass Communication and Society*, 3:1, 3-37.

Wirtz, J., & Chew, P. (2002). The effects of incentives, deal proneness, satisfaction and tie strength on word-of-mouth behaviour. *International journal of service industry management*, 13(2), 141-162.

Wright, C. R., & Cantor, M. (1967). The opinion seeker and avoider: steps beyond the opinion leader concept. *Pacific Sociological Review*, 33-43.

Yang, S., Hu, M., Winer, R. S., Assael, H., & Chen, X. (2012). An Empirical Study of Word-of-Mouth Generation and Consumption. *Marketing Science*, 31(6), 952-963.

국문초록

구전(Word-of-Mouth)는 가장 유용한 소통의 방식으로 학자와 마케터의 많은 관심과 관련 연구를 진행하여 왔다. 구전은 제품 정보 확산, 구매와 소비에 대한 정보를 통하여 소비자들의 구매결정에 영향을 주었다. 많은 선행연구에서는 구매에 끼치는 영향에 초점을 두었으며, 구전의 소비에 대한 연구가 적다. 본 연구에서는 노트북과 과자에 관한 구전의 생성과 구전의 소비의 데이터를 Yang등이 제안한 discrete choice model 변형하여 적용하여 실증분석하였다. 본 연구에서는 구전의 생성과 소비의 synergy effects를 연구하였으며 구전의 생성과 구전의 소비를 유발하는 요인에 대하여도 연구하였다. 결과 구전의 생성과 구전의 소비의 강한 synergy effects를 발견하였으며, 노트북 구전의 생성과 소비의 synergy effects는 과자의 구전의 생성과 소비의 synergy effects보다 더 강함을 나타냈다. 향후 더욱 많은 제품의 데이터를 이용하여 제품관여도에 따른 synergy effects의 차이를 연구하는데 초점을 두고 연구할 가치가 있다. 또한 본 연구에서는 제품경험과 매체노출은 구전의 생성에 영향을 미치는 것을 알 수 있다. 본 연구는 마케팅에 있어서 제품 별 구전 마케팅 도구를 활용할 수 있는 이론적 근거가 될 수 있다.

주요어: 구전, 제품, 이산 선택 모형, 시너지 효과.

학 번: 2013-23795