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The Effects of Electronic Word-of-Mouth: An Exploratory Study.

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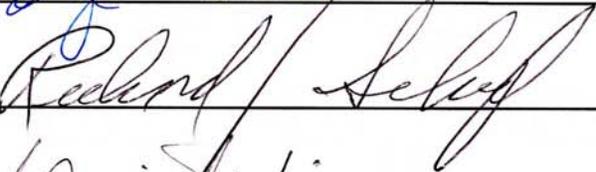
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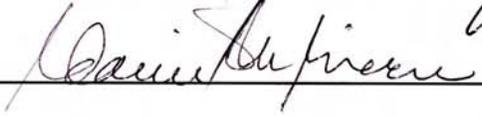
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**THE EFFECTS OF ELECTRONIC WORD-OF-MOUTH:
AN EXPLORATORY STUDY**

BY

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THESIS

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Requirements for the Degree of

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Communication**

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ABSTRACT OF THESIS

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B.A., Marketing, Renmin University of China, 2004

M.A., Communication, University of New Mexico, 2009

ABSTRACT

Although marketing and advertising professionals tend to believe the effectiveness of electronic word-of-mouth (eWOM), few studies have confirmed the eWOM effects. Therefore, this study conducted a test of eWOM effects in a laboratory experiment. Subjects were randomly assigned into three groups: advertising only, advertising and positive eWOM, and advertising and negative eWOM. Results showed that eWOM possesses influences on consumers' attitudes and purchase intentions, however the effects of positive eWOM are very limited. Results also showed that the effects of negative eWOM carry more weight than positive eWOM. This study also uncovered the complexity of eWOM effects. It is likely that the eWOM effects on changing attitude toward the brand are more direct and significant than the effects on attitude toward the ad and purchase intention. Besides, the effectiveness of eWOM may rest on the fulfillment of other antecedents. Implications for marketing practice were discussed.

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CHAPTER 1. INTRODUCTION

Before people adopt an innovation, they usually learn the innovation from their friends, family members, and peers. Research showed that some consumers do seek advices from other individuals for new product or service information. (Rogers, 2003; Flynn, Goldsmith, & Eastman, 1996; Hennig-Thurau & Walsh, 2004). The information that they seek and receive from these personal sources is referred as the word of mouth (WOM). Day (1971) defined WOM as the informal interpersonal communication that the message receiver perceives as non-commercial. Bone (1995) referred WOM as a group communication involving exchange of comments and ideas among individuals who are not considered as commercial sources.

Rogers (2003) proposed that interpersonal influences are the key to the diffusion of innovations because of its strong persuasive effects. In 1994, Wolverine, the company that makes Hush Puppies thought this brand was out of fashion and all but dead because they sold only 30,000 pairs a year. However, a group of kids in downtown Manhattan and males in Soho started to wear the shoes and spread the word of this brand. Then Hush Puppies were used by two fashion designers for their shows. In 1995, the tipping point of Hush Puppies came. Wolverine sold 430,000 classic Hush Puppies and they sold four times that next year. Finally, Hush Puppies turned to be the fashion among young males (Gladwell, 2002). When Coleman, Katz, and Menzel (1966) studied the diffusion of a

new drug tetracycline, they found that physicians turned to their peers for information about this new drug. The interpersonal communication between physicians sped up the diffusion of the new drug. Williams and Hensel (1991) investigated the change of sources of pharmaceuticals information for physicians by examining 17 studies conducted from 1952 to 1986. They also found that colleagues as a source increased its significance of pharmaceuticals for physicians.

In recent years, the advent of the Internet has extended consumers' options for interpersonal information of new products or services. With the Internet, any consumer can post comments and reviews about products or services that they used in electronic bulletin boards, news groups, or personal blogs as "electronic word-of-mouth" (eWOM). eWOM effectively becomes the source of product or service information for potential consumers. Anecdotal experiences suggested that people are likely to rely on eWOM for their decision making in choosing movies, products, and stocks (Guernsey 2000).

eWOM provides an alternative to the work of marketing practitioners.

Advertisement is better used to create awareness because of its advantage to spread messages among a great number of target audience in a relatively short period of time. However, the effects of advertising in consumers' decision making are limited due to the fragmented media and the low message source credibility (Kaikati & Kaikati, 2004; Owens, 1997). eWOM, as a form of interpersonal communication instead, may serve as an effective marketing tool in innovation adoption if it changes purchase behavior. Compared with advertising, most eWOM comes from non-commercial sources, so they

may have higher perceived credibility (Bickart & Schindler, 2001). In addition to effectiveness, eWOM is more efficient than advertising. Instead of spending million dollars on media buying, marketing practitioners now have the opportunity to promote their products and brands by using positive eWOM in online forum, electronic bulletin boards, or blogs with less cost.

Organizations believe in the persuasiveness of eWOM. For example, BMW promoted their series videos entirely on the web. Relying on viral eWOM, their videos attracted 55 million viewers and still had 80,000 downloads daily two years after the release of the videos (Porter & Golan, 2006). Recently, Chevrolet offered free rides for college students and asked them to film their driving experiences and post them online (Halliday, 2008). Besides, Fortune 500 companies such as Motorola and Intel have initiated eWOM campaigns for their brands by cooperating with newly emerged eWOM agencies. These agencies offer resources for eWOM marketing. They possess access to various electronic bulletin boards and blogs where they can help companies promote positive eWOM and control negative eWOM of their brands.

Purpose of Study

Although eWOM becomes more popular in the marketing industry, academic research has not confirmed the effects of eWOM on consumers' decision making in product or service adoption. Understanding more about eWOM effects will help marketing and advertising practitioners with their eWOM campaigns. Moreover, eWOM

and WOM may be different. eWOM occurs among strangers but WOM usually flows between people who are close such as family members and peers. It is possible that eWOM does not have the same effects as WOM because WOM is more believable. Although some studies revealed clues of eWOM effects, they did not provide solid evidence. Bickart and Schindler (2001) used loosely controlled field experiments to study eWOM effects. They found that students who read eWOM of products had a higher intention to buy products than students who read advertising. However, the differences were insignificant. Hennig-Thurau and Walsh (2003) and Lin, Luarn and Huang (2005) used surveys and focus groups to study eWOM effects. They found that eWOM affected attitudes and behaviors, but they did not directly test the effects. Therefore, it is necessary to provide more solid empirical evidence of eWOM effects. Hence, the first purpose of this study is to directly test the eWOM effects on consumers' decision making regarding a product adoption through an experiment.

Since eWOM messages received by consumers can be positive or negative, it is interesting to study their different effects on consumers' attitudes and behaviors. Some WOM research (Arndt, 1967) found that negative WOM is more persuasive than positive WOM. In other words, negative WOM is more detrimental. Regarding eWOM, no research has studied the difference of persuasiveness of positive eWOM and negative eWOM. So it is necessary to look at the different magnitude of effects between positive and negative eWOM. Thus, the second purpose of this study is to compare the persuasiveness of positive eWOM and negative eWOM.

The Hierarchy of Effects Model has been used to examine the influence of advertising for about a hundred years. This model contends that advertising effects are a long-term process that moves consumers across stages from unawareness to actual purchase. The most influential Hierarchy of Effects Model was proposed by Lavidge and Steiner (1961). They argued that consumers go through seven steps including unawareness, awareness, knowledge, liking, preference, conviction, and purchase when they are affected by advertisements. Then they generalized these seven steps as a sequence of cognition (thinking)-affect (feeling)-conation (doing). Although there is disagreement about the order of these three stages, the Hierarchy of Effects Model helps advertising practitioners and scholars predict consumer behaviors, provide information of which stage (cognition-affect-conation) is the focus of advertising strategies, and offer a planning and conceptual tool (Barry, 2002).

The Hierarchy of Effects Model is not exclusively used to study advertising effects. In fact, it has been used to examine the studies about mass communication messages, particularly persuasive messages, and their effects on interpretation and behaviors (Barry, 2002). With the advent of the Internet, many mass communication messages are online. Therefore, it is interesting to see whether this model can still be used to examine the online messages and their effects on people's attitudes and behaviors. eWOM is one type of online message that communicates with a large number of people simultaneously. Despite its non-commercial nature, it may exert influences on consumers' attitudes and purchase behaviors. Hence, the Hierarchy of Effects Model is also an appropriate frame

for studying eWOM effects. Studies conducted by Smith and Vogt (1995) and Owens (1997) have applied the Hierarchy of Effects Model to examine WOM effects. However, no research has used this model to study eWOM effects. Therefore, the third purpose of this study is to use the Hierarchy of Effects Model to investigate the eWOM effects.

CHAPTER 2. LITERATURE REVIEW

WOM and WOM Effects

WOM represents a form of interpersonal communication. Day (1971) referred to WOM as the informal interpersonal communication about products or services that the message receiver perceives as non-commercial. Bone (1992) added that WOM is a group communication phenomenon. Therefore, WOM is the informal face-to-face or group communication about products or services that is perceived as non-commercial (Buttle, 1998). This conceptualization differentiates WOM from salesman promotion because the source of WOM is non-commercial. WOM also differs from general interpersonal communication because it is product or service related.

WOM possesses certain characteristics. First, WOM can be positive or negative. Positive WOM occurs when customers satisfy with the products or services and utter their good testimonials, endorsements, or news. Negative WOM is the mirror image. Second, WOM may be uttered before or after a purchase. So WOM can be spread by post-purchase or post-use customers and this information serves as the important reference for potential customers. Third, WOM can be either solicited or unsolicited. A large part of WOM is spontaneously uttered by customers, but sometimes WOM is provided by the requests of other customers (Buttle, 1991). Fourth, WOM offers information in a dynamic interpersonal ways instead of one-side communication. Hence, WOM cannot be replaced by other marketing tool like advertising. (Ditcher, 1966). Fifth,

WOM has higher perceived credibility. Customers are more confident with WOM messages than advertising messages. (Owens, 1997). Lastly, WOM helps reduce perceived economic and social risk of purchase. Customers usually seek WOM to reduce uncertainties about new products or services before purchase. (Arndt, 1967; Buttle, 1998; Murray, 1991).

WOM is believed influential in people's decision making in new product or service adoption. In the well known two-step flow model, Lazarsfeld, Berelson, and Gaudet (1944) argued that mass media messages are not delivered to all people in one step and these messages do not overwhelmingly impact people's attitudes and behaviors. Instead, they pointed out that ideas often flow from mass media to opinion leaders in the first step and then from these to the less active population in the second step. The first step is mainly an information transmission from media or other personal sources to opinion leaders. The second step involves informal interpersonal communication spread by opinion leaders to the population impacting their attitudes and behaviors.

The two-step flow model was influential. It corrected people's beliefs that mass media messages have overwhelming influences on people's attitudes and behaviors. Instead, it proposed that mass media are largely responsible for spreading messages while interpersonal communication or WOM between people prompts their behavior changes. However, the two-step flow model oversimplified the message diffusion process. In fact, not only opinion leaders but their followers are also exposed to mass media messages. Moreover, WOM is found not only between opinion leaders and their followers but in a

whole social network (Rogers, 2003).

WOM usually flows in homophilous and heterophilous networks (Rogers, 2003). Homophily networks represent groups of individuals who shares certain attributes such as experiences, beliefs, and socioeconomic and education backgrounds, whereas heterophily networks represent groups of individuals who are different from each other. For example, homophily networks may consist of family members, friends, classmates, and colleagues, while heterophily networks include strangers. WOM among homophilous individuals is more effective than WOM in heterophilous networks in regards to people's behavior changes because the identification of both sides of communication increases the message source credibility (Rogers, 2003).

In the Diffusion of Innovation Theory, Rogers (2003) contended that WOM exerts interpersonal influences on the persuasion stage of innovation diffusion. That is, when people decide to adopt or reject a new product or service, they tend to seek product or service related information from others, such as, family members, peers, colleagues, or acquaintances. The information that they get from these people is influential in their decision regarding the adoption of the new product or service. Similarly, Buttle (1991) also proposed that WOM functions to convert prospects into customers.

Literature has documented the WOM effects on consumers' decision making. Arndt (1967) tested WOM effects in consumers' decision on adopting a new food product. He found that 54% people who received favorable WOM bought the new food, compared with 42% people who were not exposed to any WOM and 18% who were

exposed to unfavorable WOM. Significant differences were found between these three groups in terms of their adoption rate. This study revealed that both positive and negative WOM have influence on consumers' decision making in purchase of new product.

Herr, Kardes, and Kim (1991) enrolled 84 undergraduate students into four conditions (positive or negative) x (face-to-face WOM and print consumer report about a new PC) and tested their brand attitudes. Results showed that students exposed to positive WOM had significantly higher favorable brand attitudes than those who were in the positive print consumer report condition (effect size = .28). Likewise, students in the negative WOM condition formed more unfavorable brand attitudes than students in the negative print consume report condition (effect size = .32).

Bone (1995) tested WOM effects in an experiment of a new chocolate chip cookie among students. He considered positive and negative WOM as independent variables and initial and long-term product performance judgments as dependent variables. He found that WOM had significant effects on initial product performance judgment, explaining 25% of the variance. Similarly, WOM also explained 20% of the variance of the long product judgment. Moreover, WOM was more effective when subjects had ambiguous information (advertising messages and direct trial experience are different) about the product before they run into WOM.

WOM was considered credible source of information in the diffusion of medicine. Coleman, Katz, and Menzel (1966) studied the diffusion of a new drug named tetracycline and found that physicians turned to their peers for information about this

new drug when they encountered uncertainties. The interpersonal communication between physicians sped up the diffusion of the new drug. Williams and Hensel (1991) investigated the change of sources of pharmaceuticals information for physicians by examining 17 studies conducted from 1952 to 1986. They found that colleague as a source increased the significance of pharmaceuticals for physicians. They also found that conference, conventions, or meetings were important in pharmaceutical adoptions of physicians. Valente (1995) reanalyzed Coleman and colleagues' (1966) data and confirmed that both external information such as medical journals and interconnections between physicians contributed to the diffusion of tetracycline.

Other than product adoption, WOM is also effective in service switching. In the study of Wangenheim and Bayon (2004), 140 newly acquired customers and 131 non-switchers of the service of a European energy provider were interviewed. They found that the perceived influence of others' recommendation about the service significantly affected the choice of switching or staying with the service.

eWOM and eWOM Effects

Although WOM is effective in consumers' decision making, it is usually restricted to relatively homophily networks because face-to-face communication is limited to family members, classmates, or acquaintances. Despite the effectiveness of homophilous communication in persuasion, this type of network also hinders the diffusion of innovations (Rogers, 2003). People in homophilous network tend to communicate with

others who are physically close and socially similar to them. In this way, however, individuals tend to form an interlocking network which is short of outside information about innovations because intimate friends of an individual rarely share new ideas that the individual does not know. Thus, if a social network consists of many small homophily networks but lacks “bridges” between them, a certain innovation may spread rapidly in an individual homophily network but cannot diffuse to the whole social network (Brown & Reingen, 1987; Valente, 1995).

The development of the Internet provides a solution to this problem. Nowadays, WOM is available online as electronic word-of-mouth (eWOM) for all internet users. For example, when a new medicine is available in the market, early adopters can talk about their experiences of using this new product in online forums or evaluate its effectiveness based on online customer reviews. Although users in other homophily networks may have limited information of this new product, they can still obtain relevant information from the eWOM left by former adopters. eWOM offers an easier access to a more heterophilous network in which people can get information of innovations (Rogers, 2003; Rosen, 2000).

eWOM is defined as “any positive or negative statement made by potential, actual, or former customers about a product or company, which is made available to a multitude of people and institutions via the Internet” (Hennig-Thurau, Gwinner, Walsh, & Gremler, 2004, p. 39). eWOM takes many forms including web-based opinion platforms such as Epinion.com, discussion forums, boycott websites, news groups, blogs, and emails

(Hennig-Thurau, Gwinner, Walsh, & Gremler, 2004; Phelps, 2004; Vilpponen, Winter, & Sundqvist, 2006).

As the electronic form of WOM, eWOM possesses similar characteristics with WOM including valence (positive or negative), timing (uttered before or after purchase), solicitation (solicited or unsolicited), interactivity (two-side communication), and credibility (comes from fellow customers) (Bickert & Shindler, 2001). Nonetheless, eWOM also has its differences. First, compared to WOM, eWOM can be spread to larger number of audiences. Embedded in online environments, the spread of WOM is no longer restricted by traditional face-to-face communication. Every consumer who can access the Internet has the opportunity to seek desired information. Second, eWOM can be delivered to many people simultaneously. For example, organizations or their advertising agencies are able to send promotional emails to several hundred customers at the same time (Hennig-Thurau, Gwinner, Walsh, & Gremler, 2004). Third, eWOM is usually automatically kept as records for a long time so other information seekers can find it. For example, marketers refer to customers' eWOM as one important source for evaluating their products and brands (Dellarocas, 2003). Finally, unlike WOM which is usually exchanged between acquaintances, eWOM occurs among strangers. For example, in online forum individuals usually use pseudonyms. Customers will not know others' names and backgrounds. This provides opportunities for marketing companies to promote their products by hiring fellow customers to spread related eWOM. Although eWOM is generally believed to be more credible than advertising by customers and it is very

difficult to distinguish this stealth marketing (Kaikati & Kaikati, 2004), consumers may identify these type of advertising messages and agents in certain situations or be aware of the existence of stealth marketing, therefore reducing the credibility of eWOM.

Some studies also documented the effects of eWOM on consumers' decision making. Bickart and Schindler (2001) invited 70 undergraduate students to a field experiment. They randomly assigned students into two groups. One group looked at corporate information of one of five product categories including bicycling, exercise equipment, nutritional supplements, photography, and stereo equipment. The other group searched for this product related information in online forums. The product categories were also randomly assigned to subjects. After 12 weeks of information searching, both groups reported their interest in learning more about the product categories, purchase intentions, and expected spending on these product categories. Results showed that students who looked at online forums possessed significantly more interest in leaning about these product categories than students who looked at corporate messages. Students who looked at online forums also reported higher purchase intention, however the result was not significant.

Hennig-Thurau and Walsh (2004) surveyed 2903 users of four popular German online opinion platforms for their motives to read eWOM about products and services. They found that one of the major motives of opinion platform users was to obtain buying related information. In a subsequent research, users reported that this motive was highly correlated to their behaviors of buying or not buying a product or service (Standardized

Path Coefficients = .42).

Lin, Luran, & Huang (2005) conducted several focus groups interviews among 50 college students to obtain perceived effects of online book reviews on their purchase. They found that positive and negative book reviews influenced student' purchase behavior.

Although the aforementioned three studies supported to some extent that eWOM influences consumers' behavior, they did not provide solid evidence. For the study of Bickart and Schindler (2001), they did not find significant difference in the purchase intention between students who looked at corporate messages and online forum discussions. Moreover, they used a field experiment as their method, which might have included other variables contaminating their data. The study conducted by Hennig-Thurau and Walsh (2004) based its findings on data collected from self-reported surveys but did not directly test the eWOM effects. The study of Lin, Luran, and Huang (2005) used a qualitative method to study eWOM effects, which did not provide quantitative evidence of eWOM effects. Therefore, direct quantitative evidences of eWOM effects are necessary.

Hierarchy of Effects Model

The Hierarchy of Effects Model depicted the process in which advertising messages move consumers through a series of steps in sequential order from awareness to actual purchase. The premise of the hierarchy of effects is that advertisements cannot lead

to immediate purchase, rather, advertising influences are a long-term effect. Consumers must pass through each step before they finally buy the products or services.

One of the most fundamental hierarchy of effects models was proposed by Lavidge and Steiner (1961). In this model, the authors argued that consumers need to pass through seven steps including unawareness, awareness, knowledge, liking, preference, commission, and purchase when they are exposed to advertising messages of products or services. Then they generalized that advertising communication influences consumers in three stages: cognition (awareness and knowledge), affect (liking and preference), and conation (commission and purchase). These stages are not equidistant. In some instances the distance between awareness and liking is very small, whereas the distance between preference and actual purchase is extremely large. In addition, consumers may not necessarily experience each step. For example, some impulse purchase may only involve stages of affect and conation without product or service knowledge.

Conceptually, cognition represents a realm of thoughts, information, and facts provided by ads. Affect refers to emotions and feelings towards ads, brand, products, and services. Conation concerns the intentions to perform or actual performances (Barry & Howard, 1990; Yoo, Kim, & Stout, 2004). With regard to operationalizations of the three stages, Barry and Howard (1990) summarized previous studies of advertising effects and suggested that memory, such as various recall, recognition, and comprehension are key variables for the operationalization of cognition. Attitude toward the brand and ad, measured by unidimensional bipolar continuum (Holbrook & Batra, 1987) serve to

operationalize affect. Finally, purchase intention, actual purchase, product or information search are variables for the operationalization of conation.

Lavidge and Steiner (1961)'s model depicted three important stages of advertising impact. However, there has been disagreement with the order of these three stages. Krugman (1966) argued that consumers may lack information processing when they encounter repeated persuasive messages of some low-involved products or services. In this situation, repetition of TV commercials will lead to modified cognitive structure in consumers, which results in purchase without liking the products or services. Hence, he proposed a cognition-conation-affect order. Zajonc and Hazel (1982) posited an affect-conation-cognition order, which suggests liking and preference do not require a cognitive basis. In their model, consumers can first like the product, then buy it, and finally justify their choice. Ray et. al (1973) also pointed to the possibility that consumers can first buy products or services and then generate affect for their choices, which then leads to more learning. This situation may occur when consumers buy certain fashion products. So a conation-affect-cognition order is also plausible. In short, a single order of the hierarchy of effects cannot explain all phenomena. The order of three stages largely depends on the products or services and their target audiences.

The Hierarchy of Effects Model is relevant to this study due to two reasons. First, this model is basically designed to study communication messages, especially promotional messages, and WOM and eWOM are such kinds of messages. Although this model was originally designed to study advertising, it is widely used to study the effects

of other communication messages, especially the effects of promotional messages. This is because communication or promotional messages in their natures are expected to impact target audiences' perceptions, attitudes and behaviors. Thus Barry (2002) noted:

One can apply the notion of cognition, affect, and conation for a Shell logo at the Daytona 500, a Nokia product placement in a movie, a newspaper article about the VW Bug, or the appearance of the Z3 on Jay Leno's *Tonight Show*, Logos on race cars, a cell phone in a movie, a publicity release on a retro-car, or a humorous event on a television talk show all have the goal of impacting perceptions, attitudes, and behaviors of customers and prospects; and the hierarchy model is an appropriate framework for any of these forms of communication. (p. 45).

Although most WOM and eWOM are created by non-commercial sources, previous studies (Arndt, 1967; Bone, 1991; Coleman, Katz, & Manzel, 1966; Herr, Kardes, & Kim, 1991; Rogers, 2003; Valente, 1995; Wangenheim & Byon 2004; Williams & Moreover, 1991; Bickart and Schindler; 2001) offered evidences of the persuasive power of WOM and eWOM' in consumers' decision making. Moreover, manufacturers have recognized eWOM as a form of marketing communication. eWOM agencies emerged in the market place recently. They have access to eWOM sources such as electronic bulletin boards, text messages, and blogs. These agencies provide services to companies who want to promote their products with eWOM. For example, these eWOM agencies are able to gain permission from the webmaster of an electronic bulletin board. They hire college students to post positive product messages and combat negative

messages posted by other consumers in expecting more positive attitudes and sales toward the product and brand (Kaikati & Kaikati, 2004). Therefore, WOM and eWOM can be deemed as important promotional messages that influence consumers' attitudes and behaviors. Hence the Hierarchy of Effects Model is appropriate for studying the effects of WOM and eWOM.

Second, the Hierarchy of Effects Model provides important standards to evaluate WOM and eWOM effects. Despite the discrepancies of the order of stages in the Hierarchy of Effects Model, studies all recognized that cognition, affect, and conation are important measures for evaluating message effects. Attitude toward the ad, attitude toward the brand, and purchase intention as measures have been used to study advertising or other communication messages for many years. These measures are also appropriate to evaluate WOM and eWOM effects because WOM and eWOM are supposed to exert influences on the persuasion stage in the diffusion of innovations (Rogers, 2003). Moreover, the Hierarchy of Effects Model also allows studying the interaction between advertisement and WOM or eWOM, for example, the discount effect of WOM or eWOM on advertisement.

No previous studies have used the Hierarchy of Effects Model for studying eWOM effects. However, two studies dealing with WOM effects with this model were found. These two studies focused on WOM effects on affect and conation stages of the Hierarchy of Effects Model. Specifically, they provided evidence on how WOM, as a form of interpersonal communication affected consumers' attitude toward commercial

messages like ad, attitude toward brand, and purchase intention to a product or service.

These two studies provided the framework of the present study.

Owens (1997) applied the Hierarchy of Effects Model to compare the effect of advertising and WOM regarding a fictitious laptop in an experiment. He randomly assigned 167 college students into ad only, positive WOM, negative WOM, ad plus positive WOM, and ad plus negative WOM groups. He measured subjects' attitude toward the brand and purchase intention. Results revealed that students who received positive WOM reported significantly higher attitude toward the brand than students who were exposed to advertising messages (Cohen's $d = 0.63$). Although the difference of purchase intention was not significant, students who received positive WOM ($M = 3.71$, $SD = 1.38$) possessed higher purchase intentions than students who were exposed to advertising messages ($M = 3.27$, $SD = 1.56$). Moreover, they also found that positive WOM strengthens the consumers' attitude toward the ad claims of the product. The author explained that positive WOM was regarded as more credible because it was perceived as non-commercial and similar to direct product trial experiences. Therefore subjects generated a stronger confidence of their beliefs about the product, which led to more positive attitude toward the brand and higher purchase intention to the product. However, the study did not report the negative WOM effects on subjects' attitude toward the ad, the brand, and purchase intention to the product compared with the ad effects.

Smith & Vogt (1995) especially studied the effects of negative WOM by using the Hierarchy of Effects Model. They recruited college student and assigned them into ad

only group, negative WOM only group, and ad plus negative WOM group. In the ad only group, students looked at an advertisement regarding a vacation location. In the negative WOM only group, students listened to a tape in which a consumer was describing his personal experience in this place. In the ad plus negative WOM group, subjects first looked at the same ad and then listened to the tape. After the treatments, the authors measured subjects' attitude toward the ad, attitude toward the vacation location, and intention to visit the location. They found that compared to the ad only group, the negative WOM only group and the ad plus negative WOM group had significantly more negative attitudes toward the location and intentions to visit the location. They also found that ad claims in the ad plus negative WOM group ($M = 4.58$) were perceived significantly less credible than the ad only group ($M = 5.71$) (standard deviation and effect size were not reported). Moreover, attitude toward the ad was significantly lower in the ad plus negative WOM group ($M = 1.45$) than the ad only group ($M = 2.19$) (standard deviation and effect size were not reported).

These findings revealed the WOM effects on consumers' attitude toward a brand and purchase intention to the product. Positive WOM positively affects consumers' attitude and purchase intention, while negative WOM negatively influences consumers' attitude and purchase intention. When consumers first look at an ad and then hear some positive WOM of certain products, they tend to form more positive attitudes toward the ad claims, the attitudes toward the brand, and purchase intentions compared to consumers who look at the ad only. On the other side, when consumers first look at an ad and then

hear some negative WOM of certain products, they form more negative attitude toward ad claims, attitude toward the brand, and purchase intention compared to consumers who look at the ad only. The reason behind these mechanics is that WOM is more believable than commercial messages. In this way, WOM tends to generate more confidence in beliefs about products or services and leads to a change of attitude toward the brand and purchase intention. Meanwhile, because an ad is a commercial message and is believed to be non-credible, the attitude toward an ad, the brand, and the purchase intention should be strengthened when they are consistent with WOM among people. Otherwise, WOM will significantly lower consumers' attitude toward an ad, attitude toward the brand, and purchase intention.

Hypotheses and Research Question

eWOM is the electronic form of WOM. It is also generally believed credible because most eWOM comes from non-commercial sources and it provides trial experiences of products and services. Moreover, previous studies of Hennig-Thurau and Walsh (2004) and Bickart & Schindler (2001) also found clues of eWOM effects in changing consumers' attitudes toward a product and purchase behavior. Therefore, this study suggests:

H1: Compared to people who look at the ad only, people exposed to ad and positive eWOM will have more positive attitude toward the ad (Aad), while people exposed to ad and negative eWOM will have more negative attitude toward the ad.

H2: Compared to people who look at the ad only, people exposed to ad and positive eWOM will have more positive attitude toward the product brand (Ab), while people exposed to ad and negative eWOM will have more negative attitude toward the brand.

H3: Compared to people who look at the ad only, people exposed to ad and positive eWOM will have higher purchase intention (PI), while people exposed to ad and negative eWOM will have lower purchase intention.

It is also possible, within the Hierarchy of Effects frame, to compare the persuasiveness of positive eWOM and negative eWOM. Negative eWOM is one of important ways for consumers to articulate their dissatisfaction with the products or services online and it may work differently with positive eWOM.

Previously, scholars tended to believe that negative WOM is more persuasive than positive WOM (Gatignon & Robertson, 1985). In Arndt's study (1967), subjects who were exposed to unfavorable comments about a new food product were 24% less likely to buy the product than subjects who did not receive any information about the product. In comparison, subjects who were exposed to favorable comments about the product were only 12% more likely to buy the product. This result indicated that negative WOM may carry greater weight than positive WOM in consumers' decision making.

However, recent empirical studies did not confirm this hypothesis. In Owens' (1997) experiment, he found students who were exposed to positive WOM perceived WOM more credible and had higher belief confidence toward the product attributes than

students in a negative WOM group. The author attributed this result to the contamination of prior attitude toward the product category. That is, subjects may have possessed positive attitude toward the product category (laptop) before the study, so they considered negative WOM of the product as non-credible. In Smith and Vogt's study (1995), they also found that negative WOM (3.62 on a 7 points scale) was even less credible than advertising messages (5.75 on a 7 point scale). The authors stated that the exciting and colorful photographs used in the ad treatment might be the reason for stronger ad credibility.

These studies reflected the conflicting results when comparing effects of negative WOM and positive WOM. Moreover, these studies did not compare the effects of negative WOM and positive WOM on subjects' attitudes toward a brand and purchase intentions to a product or service. In this study, we will find out whether if negative eWOM is more persuasive than positive eWOM. Therefore, this study proposed the following research questions:

RQ: Dose negative eWOM carry more impact on consumers' attitude toward the ad, brand, and purchase intention than positive eWOM?

CHAPTER 3. METHODOLOGY

Experimental Design

To test the hypotheses and answer the research question, two experimental groups and one control group are needed. In the control group, subjects read an ad introducing a new product but no eWOM. This group was to establish the baseline response rates. In one experimental group, subjects read the same ad of a new product and then looked at positive eWOM regarding the product. In another experimental group, subjects read the same ad of the new product and then looked at negative eWOM regarding the product. These two experimental groups were to test the effects of positive and negative eWOM on subjects' attitude toward the advertisement, the product or brand, and the intention to purchase the product compared to the control group. Ideally, the positive eWOM group should have a higher positive attitude toward the ad, the brand, and purchase intentions than the no eWOM group. The negative eWOM group should have a lower attitude toward the ad, attitude toward the brand, and purchase intentions than the no eWOM group. It is also possible to find the differences of effects between negative and positive eWOM by comparing the mean difference between the negative eWOM group and the no eWOM group with the mean difference between the positive eWOM group and the no eWOM group.

Product Selection

To test the hypotheses and answer the research questions, a product is needed that will be appropriate for both corporate introduction and eWOM communication. Besides, the product should have relative higher product involvement so that subjects could process messages carefully. Moreover, the product should be new to subjects so they do not have existing attitude toward the product. Finally, the product should be pertinent to the subjects and possess no gender difference in this study.

A fictitious netbook was proposed as the product in this study. The netbook is a new product that emerged in 2008. It is a type of mini-laptop. The established definition of the netbook is a laptop computer with a low-powered x86 compatible processor and compatible software, small screen (no larger than 10 inch), small keyboard, wireless connectivity, lightweight (under three pounds), and no optical disk drive (Deloitte, 2009). The netbook is mainly used to do web surfing and document editing. People can also look at pictures and videos online. However, it cannot accomplish heavy tasks such as video editing. Electronic products were chosen as the broad product category because this category is sensitive to WOM communication (Owens, 1997) and has been used in previous studies of eWOM (Sohn & Leckenby, 2005; Park, Lee & Han, 2007). In Owens' (1997) study of WOM effects, he found that personal computer received higher involvement compared with other electronic items such as camera, VCR, and small appliances among students and no significant difference between male and female students in terms of their involvement of personal computer. The netbook, as a type of

personal computer, contains relative complex features that may create high product involvement. Also, netbooks are appealing to both males and females.

Brand Name

A fictitious brand name for the netbook is important so that subjects are not biased by their pre-existing attitude toward the product brand. Using a fictitious brand name would offer additional control by reducing the probability for subjects to judge the brand based on previous experiences. Ideally, a fictitious brand which is unknown to subjects will let them judge the brand relying on the information given in this experiment. In Owens' (1997) study, he tested the positivity and creativity of three fictitious brand for a fictitious laptop used in his experiment: "Class-Works", "School-Mate", and "College-Pro". "School-Mate" received neutral evaluations among college students. Therefore, this study used School-Mate as the brand name of the netbook.

Advertisement

In this study, a corporate introduction of the netbook was operationalized as the ad messages. This introduction included messages about important attributes of this product including the size, weight, battery life, software, processor, and price. These attributes reflected the key benefits of netbooks: portability, web surfing functionality, and low price (Deloitte, 2009). Besides, a product image was included. The corporate introduction of the netbook should be rated positive among subjects because it only included the benefits of the product. No brand logo was presented in the netbook introduction to avoid

the effects of subjects' attitude toward the logo. The corporate introduction was provided as a full page print advertisement (see Figure A1).

Positive and Negative eWOM

In this study, online consumer reviews were used as eWOM. Positive reviews were all positive comments on the product attributes introduced in corporate messages. In contrast, negative reviews contained all negative evaluations of the product attributes. Therefore, positive reviews should be rated as positive by subjects, while negative reviews should be rated as negative. For positive eWOM group, five positive reviews regarding different product attributes were shown to subjects on a printed-out page of supposed online forum. In negative eWOM group, the same amount of negative reviews of different product attributes was shown to subjects. To mimic real online customer reviews, at the beginning of the instrument it stated that there are some comments about the School-Mate Netbook posted by consumers on an online netbook forum. Moreover, each customer review included a title, a reviewer's web ID, the posting date, and the review content (see Figure A2 and Figure A3).

Prior Experiences

Although the netbook is a newly emerged product, some subjects may have used it before. Their previous experience may bias their responses to the eWOM effects. Therefore, the questionnaire included a question that asked if subjects have ever used a netbook before. The data of subject with prior experience were excluded from data

analysis.

Subjects

College students were selected as subjects of the experiment due to three reasons. First, college students are the main target audience of netbook because of its lower price than that of a laptop, ultra-portability, and web surfing functionality (Clark, 2008). Second, according to a recent survey, people between ages of 18-24 are more involved in eWOM activities (Riegner, 2007). Third, college students were the best subjects for this study considering the limited financial and practical condition. To ensure enough statistical power of an ANOVA analysis, a total of 180 college students were recruited from classes in a southwestern University to guard against incomplete data and subjects who have prior experience with the netbooks. Students participated in this research voluntarily.

Control Variables

Product involvement may affect the effects of eWOM on subjects' attitude toward the brand and their purchase intention. Product involvement refers to personal relevance or importance of the product for consumers (Greenwald & Leavitt, 1984; Mittal, 1995; Cong, 2007). Higher product involvement may lead to higher attitudes and the purchase intention directly (Muehling, Laczniak, & Andrews, 1993). In Hierarchy of Effects framework, Cong (2007) proposed that pop-up ads among people with high product involvement will be effective on consumers' attitude toward the brand and purchase

intention. Yoo, Kim & Stout (2004) provided evidence that animation was effective on attitude toward the ad, attitude toward the brand, and click-through intention among people with high product involvement. In this study, it is possible that subjects with high involvement of the netbook may generate higher attitude toward the ad, attitude toward the brand, and purchase intention. Product involvement was measured by five 7 points semantic differential scales adapted from Mittal (1995). (For me a netbook is important/unimportant, of concern to me/of no concern/, means a lot to me/means nothing to me, matters to me/does not matter, significant/insignificant).

People's general perceived credibility on eWOM may also affect the attitudes and purchase intentions. Generally, the more perceived credible the message, the more effectiveness of the messages (O'keefe, 2002). In this study, it is possible that subjects who perceive eWOM as very credible will form more positive attitude toward the ad, attitude toward the brand, and purchase intention. The perceived credibility of eWOM was measured by five 7 points semantic differential scales (Generally speaking, as a source of product information, I think product reviews posted by customers online are dependable/undependable, honest/dishonest, reliable/unreliable, sincere/insincere, and trustworthy/untrustworthy) adapted from Ohanian (1990).

Dependent Variables

Three dependent variables in this study are attitude toward the ad, attitude toward the brand, and purchase intention. The attitude toward the ad refers to the overall

evaluation of an ad. With respect to this study, attitude toward the ad was measured by four 7 points scale borrowed from MacKenzie and Lutz (1989). (I think the advertisement about the School-Mate Netbook is good/bad, favorable/unfavorable, pleasant/unpleasant, and likable/unlikable).

The attitude toward the brand refers to the consumers' internal evaluation of a brand (Mitchell & Olson, 1981). Attitude toward the brand School-Mate was operationalized by using the 7 points bipolar scales developed by Voss, Spangenberg, & Grohmann (2003). (My impression is that the brand "School-Mate Netbook" is effective/ineffective, helpful/unhelpful, functional/not functional, necessary/unnecessary, practical/impractical, fun/not fun, dull/exciting, delightful/not delightful, thrilling/not thrilling, and enjoyable/unenjoyable)

Purchase intention is the consumers' conscious plan to make an effort to buy a product or service (Spears & Singh, 2004). Purchase intention to the School-Mate netbook was measured by four 7 points semantic differentials adapted from (Spears & Singh, 2004). (Assuming that this product will soon be available locally, how likely is it that you will buy the School-Mate Netbook? Never/Definitely, probable/improbable, do not intend/intend to buy, and likely/unlikely).

Procedure

The experimenter walked into classrooms and conducted the experiment. At the beginning, the experimenter told students that he was a master student who was doing his

master project which helped a company to test its new product. The experimenter also said to the students that the reason that he chose them as subjects was that they were exactly the target audience of the product. This fictitious goal of study was made to prevent demand bias and improve the internal validity of the study. Then students were randomly assigned into three groups by random distribution of three different kinds of treatment materials. Students assigned into control group got a consent form, a short instruction, an ad introducing the School-Mate Netbook, and a questionnaire (see Figure A4 and A5). Students in positive and negative eWOM groups got an additional page of online customer reviews which was put between the corporate introductions and the questionnaire. Then the experimenter asked students to fill out the consent form and read the instruction carefully. The instructions included the fictitious goal of the study (a test a new product) and the procedures of the experiment. In addition, the instructions stated (1) “We are not concerned whether your responses are positive or negative”, (2) “There are no right or wrong answers and we are interested in your honest opinions”, (3) “The materials and questions you get may be different from others, please do not talk to each other about your questions and answers”, and (4) “Please ask the experimenter directly if you have any questions regarding to the materials and questions”. These methods were employed to manage the demand bias and cross-group contamination. To ensure the message involvement among students, they were told to read the materials carefully and form an evaluation about the product. After the instruction, all students were asked to follow the procedures in the instructions. In the control group, the instructions told

students to first read the company introduction of a new product called School-Mate netbook and then answer some questions about the product. In the experimental groups, students were instructed to first look at the company introduction of a new product called School-Mate netbook, then read online customer reviews about this new product, and finally answer some questions regarding the product. The experimental groups were especially asked not to go back to the ad after reading it. Next, all students filled out a questionnaire measuring their involvement with the netbook, attitude toward the corporate introduction, attitude toward the School-Mate Netbook, and purchase intention regarding the product. Finally, students turned in their materials and questionnaires to the experimenter and the experimenter had a two minutes debrief about the true aim of this study. Participants were asked not to talk about this test with others after they leave.

Reliability

Reliability refers to the degree to which a concept is measured accurately without bias and error. It assumes that a reliable measure of a concept will yield the same results in repeated tests in different situations. In this study, all measures of variables were borrowed from previous studies of advertising and WOM effects. These measures have been used and re-used by different scholars across many years and reported as reliable. Therefore, the reliability of these measures was ensured. Moreover, all measures in this study were checked with inter-item reliability test to further ensure their reliability. The inter-item reliability assumes that a reliable measure should include questions that are

consistent with each other in measuring the same concept. Therefore, the inter-item reliability is an evaluation of the association of a set of items in a measure. In this study, the inter-item reliability was measured by Cronbach's alpha. Measures were considered reliable with the inter-item reliability (alpha) higher than .70.

Validity

Validity concerns the degree to which an instrument measures the concept which it is supposed to measure. Major forms of validity include content validity, predictive validity, construct validity, convergent, and discriminant validity, and external validity.

Content validity refers to the degree to which the measurement covers all the meanings of the concept that it is supposed to measure. The content validity is usually evaluated by several experts in the area or sample subjects of study. In this research, the measures of product involvement, attitude toward the ad, attitude toward the brand, and purchase intention were all borrowed from previous studies that were based on thorough literature review comparing and contrasting meanings of these measures. In addition, experts from communication and marketing areas in this thesis committee also ensured the content validity of these measures.

Predictive validity concerns the ability of a measure to assess a future behavior. As long as this study is concerned, one of main goals of the Hierarchy of Effects framework is to make prediction. Literature has established the predictability of the studied measures (e.g. product involvement, attitude toward the ad, attitude toward the brand, and purchase

intention). Hence, the measures used in this study were considered valid.

Construct validity refers to the degree to which an operationalization of a measure truly reflects the construct of the concept. The unidimensionality of the measures used in this study were all tested by their developers (Mittal, 1995; Spears & Singh, 2004; Voss, Spangenberg, & Grohmann, 2003). Therefore, the validity of these measures was established.

Convergent validity is established if a measure highly correlates with other measures toward the same construct. Discriminant validity is achieved when the operationalization of a concept is not highly correlated to other operationalizations of different concepts. These two methods help ensure the instrument measures the concept that is supposed to measure. In this study, these two types of validity were well established by the instrument developers. For example, Mittal (1995) supported that his product involvement measurement were highly related to the other three popular product involvement measures. Voss, Spangenberg, & Grohmann (2003) showed evidence that their measure of attitude toward the brand was different from product involvement although both of them use semantic differential method. Spears & Singh (2004) also established the discriminant validity of attitude toward the brand and purchase intention. Therefore, the validity of the measures in this study was assumed.

External validity concerns the generalizability of the study results. The limitation of experiment studies is its external validity in that the results found in laboratory environment have limited generalizability when they are applied to real lives. In this

study, college students were selected as subjects because they are the main target audience of netbook and the main population of eWOM activities. However, the results cannot be simply generalized to other groups of people. Moreover, the netbook was an emerging product and belongs to electronic product category, so the results of this study may not apply to other product categories. Finally, the eWOM instruments were printed on paper but not on a webpage. It is possible that people who read eWOM on webpage in a real internet environment have different feelings compare to subjects who read eWOM on paper. To increase the external validity regarding this problem, the printed eWOM will try to mimic the real online customer reviews. At the beginning of the instrument it stated that they were some comments on the School-Mate Netbook posted by consumers on an online netbook forum. Moreover, each customer review included a title, a reviewer's web ID, the posting date, and the review content. Finally, subjects were randomly assigned to different treatment groups.

CHAPTER 4. RESULTS

Sample

In total 180 collected questionnaires were inspected for errors. 11 incomplete questionnaires were found. They spread in different groups randomly and missing data spread randomly in questions. 1 incomplete questionnaire did not report the subject's gender. As gender is not a key variable in this study, this questionnaire was retained. Other 10 incomplete questionnaires missed either one or several scales or questions that are important to the study. Due to the sufficient recruited sample and the non-random distribution of missing data, these 10 incomplete questionnaires were removed from the next-step analysis. 2 questionnaires were found answering all scales with same numbers (e.g. 0 or -3). Considering these data may not be the objective reflection of subjects' true evaluation, these questionnaires were also removed from the next-step analysis. Next, in total 57 subjects answered that they have used a netbook before this study. As mentioned in the method section, their prior attitudes may bias their current attitudes toward the ad, attitude toward the brand, and purchase intention to the School-Mate netbook in this study. Hence, these 57 questionnaires were excluded from the next-step analysis. Finally, in total 111 cases were retained to next-step analysis in which 56 respondents were males and 54 were females (1 subject did not report gender). The ad only group had 36 cases including 20 male and 16 female respondents. The ad and positive eWOM group had 39 cases in which 17 were male and 22 were female respondents. The ad and negative

eWOM group had 36 cases including 19 male and 16 female respondents (1 subject did not report gender). Gender was evenly distributed in sample overall and in each group.

Reliability of Variable Measures

In these 111 cases, results showed that the Cronbach's alpha of all variable measures exceeded .70: product involvement ($\alpha = .95$), perceived credibility of eWOM in general ($\alpha = .90$), attitude toward the brand ($\alpha = .94$), attitude toward ad ($\alpha = .93$), and purchase intention ($\alpha = .97$). Therefore, the reliability of all variable measures in this study was ensured.

Manipulation Checks

In experiment groups, online customer reviews should be perceived as positive and negative respectively. The positivity of online customer reviews in two experiment groups was measured by four 7 points bipolar scales with -3 and 3 as end points borrowed from Owens (1997), Smith & Vogt (1995), and Yoo, Kim, & Stout (2004) in control group (These online customer reviews consider the School-Mate Netbook as favorable/unfavorable, good/bad, positive/negative, and likeable/unlikable). In these 111 cases, results showed that the average positivity of the positive eWOM was 2.27 and the positivity of the negative eWOM was -1.85. Therefore, the manipulation was successful.

Missing data, normality, and outliers

Analysis of Covariance model (ANCOVA) was used to test hypotheses. The data

analysis procedure and strategy were borrowed from Tabachnick and Fidell (1989) and Tabachnick and Fidell (2001). As incomplete questionnaires were excluded from the sample, there were no missing values of key variables in this study.

Normality of variables including product involvement, perceived credibility of eWOM in general, attitude toward the brand, attitude toward the ad, and purchase intention in three groups were checked by visually inspecting the histograms respectively. Meanwhile, the Shapiro-Wilk score was also used to test the normality as a statistical test. Table B1 showed descriptive statistics of five variables in each group.

Histograms showed that most of variables were approximately normally distributed in three groups except attitude toward the ad in the positive eWOM and negative eWOM groups and purchase intention in negative eWOM group. Attitude toward the ad in the positive eWOM and negative eWOM groups were negatively skewed. Their skewness were -1.17 and -1.254 respectively and exceeded -1. Purchase intention in the negative group was positively skewed with almost half responses on -3. The skewness was .878 and close to 1. The Shapiro-Wilk test also revealed that their scores were significance, indicating non-normal distribution of the data. For attitude toward the ad in the positive eWOM and negative eWOM groups, further inspections on their histograms revealed that their non-normality may be attributed to certain extreme values on the left side. Therefore, it was decided to review their normality after checking outliers. Several methods including square root, logarithm, and inverse were tried to transform the purchase intention. However, the shape of non-normal distribution and high skewness were not

improved. Tabachnick and Fidell (2001) proposed that normality in grouped data means the normality of sampling distribution of means but not raw data. If sample size is big enough and can ensure at least 20 degree of freedom of error, then the normality of sampling distribution is not a problem. This study included 111 raw cases which will definitely ensure a degree of freedom of error larger than 20. Hence, purchase intention was retained to next-step analysis.

Both univariate and multivariate outliers of five continuous variables were checked in each group. Among continuous variables, univariate outliers refer to extreme values of an individual variable. Multivariate outliers are unusual cases when considering two or more variables combined together (Tabachnick and Fidell, 1989). In grouped data, univariate and multivariate outliers should be checked within each group. In this study, SPSS boxplot, five highest and lowest values of each variable in each group, and Z score were used to find univariate outliers. Because sample size in this study was relative small, outliers may affect data more substantially. Hence, values with Z scores higher than 2.58 and lower than -2.58 was considered as univariate outliers. Mahalanobis distance was used to inspect multivariate outliers. In each group, Mahalanobis distance was based on three variable combinations: (1) product involvement-perceived credibility-attitude toward the ad, (2) product involvement-perceived credibility-attitude toward the brand, and (3) product involvement-perceived credibility-purchase intention. Mahalanobis distance is distributed as Chi-square distribution. A very conservative probability estimate ($p = .001$) for a case being an outlier is appropriate with Mahalanobis distance.

The degree of freedom equals to the amount of variables. In this study, the critical value of Mahalanobis distance was $\chi^2 = 16.27$, $df = 3$, $p = .001$. Mahalanobis distance larger than 16.27 was considered as multivariate outliers.

Boxplot showed that attitude toward the ad in the positive eWOM group had one univariate outlier case 7. Attitude toward the ad in the negative eWOM group had three potential univariate outliers including case 11, 12, and 105. Boxplot identified that case 105 was also a potential outlier in attitude toward the brand in the negative eWOM group. SPSS five highest and lowest values were also checked. Case 7, 12, 105 did have extreme values that disconnected with other values. Additionally, case 45 attitude toward the ad in no eWOM group was a potential outlier. Purchase intention in negative eWOM group had one outlier case 91. Further, Z scores of all variables in each group were assessed. Results showed that case 7, 12, 45, 91 and 105 were outliers with Z scores -3.55, -2.82, 2.66, 2.72, and -2.82, respectively. Next, Mahalanobis distance was used to inspect multivariate outliers. Two outliers case 7 and case 45 were identified with a Mahalanobis distance 17.69 and 17.36.

As case 45 was both univariate and multivariate outliers, it was removed from the sample. Case 91 was disconnected with other values and its Z score exceeded 2.58, therefore this case was also removed. As case 7, 12, 105 were all in attitude toward the ad in the positive eWOM and negative eWOM groups. Methods including square root, logarithm, and inverse were tried to transform the attitude toward the ad. However, no improvement was found regarding the skewness of the data distribution and outliers were

still existed. Therefore, it was decided to delete these outliers. After these five cases were removed, outliers were checked again because some outliers may hide behind other outliers. Then case 11 emerged as an outlier with Z score -2.76. This case was also identified by SPSS boxplot. Hence, this case was also removed. Finally, six outliers were removed from the sample. 105 cases were retained to next-step analysis in which the no eWOM group had 35 cases, the positive eWOM group had 38 cases, and the negative eWOM group had 32 cases.

Descriptive statistics was executed again after outliers were removed from the sample (see Table B2). The skewness of attitude toward the ad in the positive eWOM group was substantially improved from -1.17 to 0.238. Similarly, the skewness of attitude toward the ad in the negative eWOM group was improved from -1.254 to -.012. The Shapiro-Wilk test showed their scores were insignificant, $p = .264$, $df = 38$ and $p = .895$, $df = 32$. Therefore, the attitude toward the ad in the positive eWOM and negative eWOM groups were normal distributed. The skewness of purchase intention in the negative eWOM group was improved from .878 to .530. However, the Shapiro-Wilk test still indicated non-normality with significance value, $p = .002$, $df = 32$. Therefore, the purchase intention in the negative eWOM group was still non-normally distributed.

Homogeneity of Variance

As suggested by Tabachnick and Fidell (2001), homogeneity of variance can be tested by calculating the F_{\max} score, which is the ratio of largest variance to smallest

variance of a variable's distribution in different groups. If sample sizes of different groups are fairly equal and no outliers are present, F_{\max} ratio less than 10 indicates homogeneity of variance. In this study, the largest F_{\max} ratio among five continuous variables was in the distribution of product involvement in three groups with the value 1.95. Considering the sample size was fairly equal and outliers have been removed, F_{\max} ratio indicated homogeneity of variance was attained.

Absence of Multicollinearity

If there are multiple covariates in ANCOVA analysis, they cannot strongly correlate to each other. A preliminary analysis evaluating the correlation between two covariates the product involvement and the perceived credibility of eWOM in general was conducted. Correlation coefficient under .80 will show there is no strong correlation between these two covariates and they are two distinct variables. Pearson correlation coefficient showed that there was significant correlation between product involvement and perceived credibility of eWOM in general, $r = .291$, $n = 105$, $p < 0.5$. Hence, the absence of multicollinearity was achieved.

Linearity

Linear relationship between pairs of covariates and dependent variables is the basic assumption of ANCOVA because ANCOVA is based on general linear model. Curvilinear relationship between pairs of covariates and dependent variables may reduce statistical power of ANCOVA and fail to fully reduce the error terms. In this study, SPSS

scatterplot was executed to test the linearity between pairs of two covariates and three dependent variables. No obvious curvilinear relationship was found. Therefore, the assumption of linearity was achieved.

Homogeneity of Slopes

The assumption of homogeneity of slopes was checked to see if the relationship between covariate and dependent variable is significantly different as a function of independent variable at an alpha level of .05. Heterogeneous slopes indicate interaction between independent variables and covariates and ANCOVA model is then inappropriate. In this study, homogeneity of slopes test was executed by evaluating the interaction between two covariates and independent variable three times based on three dependent variables: attitude toward the ad, attitude toward the brand, and purchase intention. Insignificance of interaction effects at .05 level indicated homogeneity of slopes

When attitude toward the ad was the dependent variable, results showed that the interaction effects between product involvement and group was insignificant at .05 level, $F(2, 96) = 1.571, p > .05$. Similarly, the interaction effects between perceived credibility of eWOM and group was insignificant, $F(2, 96) = .593, p > .05$. Thus, homogeneity of slopes was achieved.

When attitude toward the brand was the dependent variable, results showed that the interaction effects between product involvement and group was significant, $F(2, 96) = 5.804, p < .05$. Thus, homogeneity of slopes between product involvement and attitude

toward the brand in three groups were rejected. Attitude toward the brand was then logarithm transformed. Descriptive statistics of logarithm attitude toward the brand (LAb) was shown in Table B3. Normality, homogeneity of variance, and linearity of this variable were checked again and they were achieved. Interaction effects between logarithm attitude toward the brand and group was tested. Results showed that interaction effects became insignificant, $F(2, 96) = 2.578, p > .05$. Thus, homogeneity of slopes was achieved and logarithm attitude toward the brand was used in next-step analysis instead of attitude toward the brand. The interaction effects between perceived credibility of eWOM in general and group was insignificant, $F(2, 96) = 1.209, p > .05$. Homogeneity of slopes of perceived credibility of eWOM in general in three groups was achieved.

When purchase intention was the dependent variable, results showed that the interaction effects between product involvement and group was insignificant, $F(2, 96) = 3.070, p > .05$. The interaction effects between perceived credibility of eWOM and group was also insignificant, $F(2, 96) = 1.206, p > 0.5$. Thus, homogeneity of slopes was achieved.

Hypothesis Testing with ANCOVA analysis

Hypothesis 1 suggested that compared to people who look at the ad only, people exposed to ad and positive eWOM will have more positive attitude toward the ad, while people exposed to ad and negative eWOM will have more negative attitude toward the ad.

The independent variable was the group difference (no eWOM, positive eWOM, and negative eWOM). The dependent variable was attitude toward the ad. Meanwhile, some subjects may possess higher attitude toward the ad than others because they regarded themselves highly relevant to the School-Mate netbook or perceived eWOM more credible than others. Therefore, two covariates product involvement and perceived credibility of eWOM in general were included in analysis.

When product involvement and perceived credibility of eWOM in general were not adjusted as covariates, the positive eWOM group had the highest attitude toward the ad ($M = 1.4605, n = 38$) and attitude toward the ad in no eWOM ($M = 1.1214, n = 35$) and the negative eWOM groups ($M = 1.1953, n = 32$) were close. Then, an ANCOVA analysis was conducted with adjusting the values of product involvement and perceived credibility of eWOM in general. Adjusted means revealed that subjects in negative eWOM group had the highest attitude toward the ad ($M = 1.482, n = 32$), followed by subjects exposed to positive eWOM ($M = 1.295, n = 38$) and subjects exposed to no eWOM ($M = 1.040, n = 35$) (see Table B4). There was no significant difference in subjects' attitude toward the ad between three groups, $F(2, 100) = 1.905, p > .05$. A very small effect size was found, partial eta squared = .037. In contrast, there was significant relationship between product involvement and attitude toward the ad, $F(1, 100) = 7.983, p < .05$. However, the effect size was small, partial eta squared = .074. Similarly, significant relationship between perceived credibility of eWOM in general and attitude toward the ad was found, $F(1, 100) = 7.883, p < .05$, but the effect size was also small,

partial eta squared = .073 (see Table B5). As non-significant difference was found between groups in terms of their attitude toward the ad, hypothesis 1 was rejected.

Hypothesis 2 proposed that compared to people who look at the ad only, people exposed to ad and positive eWOM will have more positive attitude toward the brand, while people exposed to ad and negative eWOM will have more negative attitude toward the brand. The independent variable was the group difference (no eWOM, positive eWOM, and negative eWOM). The dependent variable was logarithm attitude toward the brand. Meanwhile, some subjects may possess higher attitude toward the brand than others because they are more relevant to the School-Mate netbook or perceived eWOM more credible than others. Therefore, two covariates product involvement and perceived credibility of eWOM in general were included in analysis.

When product involvement and perceived credibility of eWOM in general were not adjusted as covariates, the positive eWOM group had the highest attitude toward the ad ($M = .7268, n = 38$), followed by subjects in the no eWOM group ($M = .7144, n = 35$) and the negative eWOM group ($M = .5609, n = 32$). Next, an ANCOVA analysis was conducted with adjusting the values of product involvement and perceived credibility of eWOM in general as two covariates. Adjusted means revealed that subjects in positive eWOM group had the highest logarithm attitude toward the brand ($M = .713, n = 38$), followed by subjects exposed to no eWOM ($M = .711, n = 35$) and subjects exposed to negative eWOM ($M = .582, n = 32$) (see Table B6). There was significant difference in subjects' logarithm attitude toward the brand among three groups, $F(2, 100) = 26.999, p$

< .05. Moreover, a large effect size was found, partial eta squared = .351. There was also significant relationship between product involvement and logarithm attitude toward the brand, $F(1, 100) = 16.194, p < .05$ with a medium effect size, partial eta squared = .139. However, no significant relationship was found between perceived credibility of eWOM in general and logarithm attitude toward the brand, $F(1, 100) = .531, p > .05$, partial eta squared = .005 (see Table B7).

Follow-up tests were conducted to evaluate pairwise differences among the adjusted means of the logarithm attitude toward the brand. Three Lmatrix commands were used to compare the difference in logarithm attitude toward the brand among three groups. The Bonferroni procedure was used to control for Type I error across the three pairwise comparisons ($\alpha' = .05/3 = .017$). Table B6 showed pairwise comparison by SPSS with Bonferroni adjustment for multiple comparisons. Results revealed that there were significant difference between subjects exposed to no eWOM and negative eWOM in terms of their logarithm attitude toward the brand, $F(1, 100) = 43.323, p < .017$. Similarly, significant difference was found between subjects exposed to positive and negative eWOM, $F(1, 100) = 42.986, p < .017$. However, there was insignificance between subjects exposed to no eWOM and positive eWOM regarding their logarithm attitude toward the brand $F(1, 100) = .009, p > .017$ (see Table B6). Therefore, hypothesis 2 was partially supported.

Hypothesis 3 suggested that compared to people who look at the ad only, people exposed to ad and positive eWOM will have higher purchase intention, while people

exposed to ad and negative eWOM will have lower purchase intention. The independent variable was the group difference (no eWOM, positive eWOM, and negative eWOM). The dependent variable was purchase intention. Meanwhile, some subjects may have higher purchase intention than others because they are more involved in the School-Mate netbook or perceived eWOM more credible than others. Therefore, two covariates product involvement and perceived credibility of eWOM in general were included in analysis.

Without adjusting the product involvement and perceived credibility of eWOM in general, results showed that the positive eWOM group had the highest attitude toward the ad ($M = -.0132, n = 38$), followed by subjects in the no eWOM group ($M = -.2571, n = 35$) and the negative eWOM group ($M = -1.6094, n = 32$). An ANCOVA analysis was conducted with adjusting the values of product involvement and perceived credibility of eWOM in general. Adjusted means revealed that subjects exposed to no eWOM had the highest purchase intention ($M = -.372, n = 35$), followed by subjects in positive eWOM group ($M = -.382, n = 38$) and the negative eWOM group ($M = -1.045, n = 32$) (see Table B8). There was no significant difference in subjects' purchase intention among three groups: $F(2, 100) = 2.555, p > .05$, partial eta squared = .049. There was also no significant relationship between perceived credibility of eWOM in general and purchase intention: $F(1, 100) = 3.756, p > .05$, partial eta squared = .036. However, significant relationship was found between product involvement and purchase intention: $F(1, 100) = 33.67, p < .05$. A large effect size was found, partial eta squared = .252 (see Table B9).

As no significant difference was found between groups regarding their purchase intention, hypothesis 3 was rejected.

CHAPTER 5. DISCUSSION

The goal of this study was to test the effectiveness of eWOM in people's purchase decision under a hierarchy of effects model. Specifically, this study suggested that people who read an ad and positive eWOM of the product will have a higher attitude toward the ad, attitude toward the brand, and purchase intention compared to people exposed to the ad only. In contrast, people who read an ad and negative eWOM of the product will have a lower attitude toward the ad, attitude toward the brand, and purchase intention compared to people exposed to the ad only. This study also proposed a research question to compare the magnitude of effects between positive eWOM and negative eWOM.

eWOM Effects on Attitude toward the Ad

As results have shown, eWOM posts no significant influences on subjects' attitude toward the ad when product involvement and perceived credibility of eWOM in general were adjusted. This result suggested that when consumers have the same level of personal relevance of a product and the same perception regarding the credibility of eWOM, the eWOM will not influence their attitude toward the ad of the product. It is also found that subjects' perceived credibility of eWOM was correlated to the attitude toward the ad. This showed that the perceived credibility of eWOM plays a role in affecting attitude toward an ad. Moreover, the eWOM effects on attitude toward the ad depend on the perceived credibility of eWOM. Therefore, the more perceived credibility the eWOM has,

the more eWOM effects on attitude toward the ad.

However, it is argued that the effects of perceived credibility of eWOM on attitude toward the ad were limited. In this study, the effect size (partial eta squared) of perceived credibility of eWOM on attitude toward the ad was only .074. Indeed, attitude toward the ad consists of many antecedents including ad credibility, ad perceptions, attitude toward the advertiser, attitude toward advertising in general, and mood (MacKenzie & Lutz, 1989). eWOM may particularly influence ad credibility but not attitude toward the ad in general because the perceived credibility of eWOM may strengthen or discount the ad credibility only.

A possible reason to explain the insignificant group difference on attitude toward the ad is that the online customer reviews as treatment in this study were not credible enough to subjects. Results revealed that the adjusted mean of attitude toward the ad in the negative eWOM group ($M = 1.482$) was higher than the positive eWOM ($M = 1.295$) and no eWOM groups ($M = 1.040$). It is possible that the negative online customer reviews used in this study were not perceived as credible as it was expected. Therefore, these negative reviews failed to weaken the credibility of the ad and lead to lower attitude toward the ad. Similar problems were also found in studies conducted by Owens (1997) and Smith & Vogt (1995). They found that subjects exposed to negative WOM perceived WOM treatment less credible than ad and positive WOM, thereby actually reducing their belief strength and confidence on WOM. In this way, WOM couldn't effectively discount the effects of ad. Owens (1997) also provided some comments offered by subjects about

the WOM treatment. Some subjects proposed that not all users feel the same way and the product should have certain benefits, indicating their doubt on the objectiveness of one side negative WOM treatment. Therefore, people may process negative WOM and eWOM differently or in a more complex pattern than positive WOM and eWOM, particularly when customer comments are all negative.

The insignificant difference between groups on attitude toward the ad also reflected that consumers may not simply believe eWOM only because they are posted by previous customers. Indeed, eWOM is spread in heterophilous networks in which the senders and receivers of messages are strangers. It is likely that eWOM effects are weaker than WOM which is spread among peers, family members, close friends, and other homogenous networks (Rogers, 2003). Moreover, when consumers become more aware of the eWOM's role as a potential marketing technique, the effects of eWOM on consumers will be inevitably impaired because it may gradually turn to be a commercial source of product information to consumers.

Finally, although product involvement was not a key variable of interest in this study, results showed that it was correlated to the attitude toward the ad. Therefore, consumers may form more positive attitude toward an ad of a product or service if they are more relevant. However, the effects of product involvement are also limited. In this study, the partial eta squared was only .073, which represented that a very small variance of attitude toward the ad can be explained by product involvement.

eWOM Effects on Attitude toward the Brand

Data analysis revealed significant difference among groups when subjects had the same level of product involvement and perceived credibility of eWOM in general. This result suggested that eWOM has significant influence on attitude toward the brand. Moreover, the eWOM effects were substantial because they explained a large part of variance of attitude toward the brand (Partial Eta Squared = .351). Specific comparison showed that negative eWOM was effective in changing subjects' attitude toward the brand but positive eWOM failed to achieve it.

The findings were inconsistent with Owen's study (1997) regarding the effects of positive eWOM. In his study, subjects exposed to an ad and positive WOM had significant higher attitude toward the brand than subjects exposed to ad only. However, in this study, the attitude toward the ad in the no eWOM group ($M = .711$) and the positive eWOM group ($M = .713$) were almost on the same level. It is possible that positive eWOM has no substantial effects on attitude toward the brand when consumers have been already exposed to a positive ad and formed certain level of positive attitude toward the product or service. Therefore, it is suggested that the effects of positive eWOM may be limited in changing attitude toward the brand when consumers have been already exposed to certain company promotions such as advertisements. As for the effects of negative eWOM, the findings in this study were consistent with the study of Smith and Vogt (1995). Negative eWOM did have a significant influence on attitude toward a brand. Thus, negative eWOM will largely discount the effects of an ad of a product and

eventually damage the attitude toward the brand.

The data also uncovered that the relationship between perceived credibility of eWOM in general and attitude toward the brand was insignificant. This means that the perceived credibility of eWOM may not be the key factor running behind eWOM effects on attitude toward the brand. Silverman (2001) proposed that an important feature of WOM is that it provides product usage experience to potential customers. Park, Lee, & Han (2004) also addressed the importance of the quality of online customer reviews in changing consumers. They referred to quality as personal relevance, understandability, and persuasiveness with sufficient reasons based on facts of products. Thus, providing product usage experience may be the true benefit and a prerequisite of WOM and eWOM in affecting consumer's attitudes. If the WOM or eWOM fails to offer useful experience that is sought by consumers, it loses its impact on changing consumers' attitude even it is perceived credible.

Finally, similar to the influence of product involvement on attitude toward the ad, product involvement was also significantly correlated to attitude toward the brand. Therefore, consumers who have more product relevance are more likely to have more positive attitude toward the brand. Nevertheless, the effects of product involvement on attitude toward the brand are also limited. In this study, product involvement only explained 13.9% variance of attitude toward the brand (Partial Eta Squared = .139).

eWOM Effects on Purchase Intention

As for the eWOM effects on purchase intention, no significant group difference was found when product involvement and perceived credibility of eWOM in general were adjusted. Thus, when subjects are equal in their personal relevance to the product and perception of eWOM credibility, eWOM does not cast influence on their purchase intention. Results also showed that the perceived credibility of eWOM in general had no significant correlation to purchase intention.

In this study, the adjusted means of purchase intention in no eWOM ($M = -.372$) and positive eWOM ($M = -.382$) groups were on the same level. Thus, positive eWOM possessed no effects on subjects' purchase intention. This finding was consistent with Owens' study (1997). He also failed to find significant WOM effects on subjects' purchase intention. When dealing with negative eWOM effects, although no significance was found, it was noticed that subjects in the negative eWOM group reported lower purchase intention ($M = -1.045$) than the no eWOM and positive eWOM groups. Therefore, it is proposed that negative eWOM had certain discount effects on subjects' purchase intention. In this sense, this study was also accord with the research of Smith & Vogt (1995). They found significant negative eWOM effects on purchase intention.

The reason to the insignificant group difference on purchase intention is that eWOM effects may not be sufficient to significantly change the purchase intention. According to the Planned Behavior Theory (Ajzen, 1985), one of the components determining people's behavior intention is their perceived behavior control or

self-efficacy. Perceived behavior control refers to people's perceived ability to conduct or control the behavior. As argued by Ajzen (1985), sometimes lower intention to certain behavior or failure to actually perform a behavior may not be attributed to attitudes towards this behavior. Instead, lacking internal resource or ability to control or being obstructed by overwhelming external factors may decrease behavior intention. An inspection of the questionnaires collected in this study revealed that some subjects reported positive attitude toward the brand after reading the positive online customer reviews. However, they assessed their purchase intention as negative. Therefore, it is likely that some subjects in this study lacked the ability to purchase. For example, they were short of money to buy. In this way, the eWOM effects on purchase intention are restricted.

Another factor that limited the eWOM effects on purchase intention is the product involvement. In this study, results showed that product involvement of subjects was significantly correlated to purchase intention. Moreover, product involvement explained as large a variance as 25% (Partial Eta Squared = 25.2) of purchase intention. Hence, product involvement serves as a critical prerequisite of eWOM effects. If consumers regard a product or service as less personal relevant, purchase intention will not be effectively raised even if they are exposed to eWOM promotion.

The Magnitude of Positive and Negative eWOM Effects

When the effect magnitude of positive eWOM and negative eWOM was

investigated, the results were complex. For attitude toward the ad, the adjusted mean in the positive eWOM group ($M = 1.295$) was slightly higher than the mean in the no eWOM group ($M = 1.040$). It is expected that the attitude toward the ad in the negative eWOM group should be lower than the no eWOM group. However, the adjusted mean in the negative eWOM group ($M = 1.482$) was even higher than the no eWOM and positive eWOM group. In this sense, positive eWOM is supposed to be more effective than negative eWOM in changing attitude toward the ad. However, this result should be interpreted with caution. As aforementioned, the negative eWOM in this study may have not functioned effectively because subjects regarded it as less credible. Even the negative eWOM was perceived credible, it could only affect the ad credibility but not the attitude toward the ad.

As attitude toward the brand is concerned, specific comparison showed that positive eWOM had no significant effects, while negative eWOM significantly influenced the attitude. It was clear that negative eWOM holds more effect magnitude than positive eWOM in changing attitude toward the brand. A similar phenomenon was found in purchase intention. Although this study did not find significant group difference regarding purchase intention, the difference between adjusted means still reflected that negative eWOM was more influential (see Table B8). The mean in the negative eWOM group ($M = -1.045$) was substantially lower than the mean in the no WOM group ($M = -.372$). However, the mean in the positive eWOM group ($M = -.382$) was almost the same with the mean in the no WOM group.

Implications

The results of this study proposed several implications to marketing and advertising. First, eWOM plays a part in the diffusion of new product. Similar to WOM, eWOM can to some extent influence consumer's attitude and purchase decision as well. The internet provides manufacturers a new possibility to use WOM effectively on the web. Manufacturers should seize this opportunity and utilize eWOM as a part of their marketing and advertising plan. When they promote a new product or service, they can initiate an eWOM campaign after advertising in mass media. For example, they can invite customers to post their comments about the product on key discussion forum or newsgroups. If the eWOM promotion is perceived credible enough and it offers the needed information, these online customer reviews can potentially strengthen customers' attitude toward the ad and brand, which paves the way to increase sales.

Nevertheless, the limited effects of positive eWOM should also be noticed. First, when manufacturers initiate an eWOM promotional campaign after advertising, positive eWOM may contribute limited effects on consumers' attitude because consumers may have already built a preexisting positive attitude toward the product or service. Second, an eWOM campaign may not be simply perceived as credible enough because the senders of eWOM are basically strangers to receivers in heterophilous networks. Moreover, as more eWOM promotions are used by companies, consumers will be gradually aware that an eWOM can also be a commercial tool and not a personal opinion. In this way, eWOM becomes harder to believe in the future.

Second, product and service providers should be aware of the effects of negative eWOM. This study partially supports the argument that negative WOM possess more effects than positive WOM and it can be damaging to the equity of attitude toward the brand. It is suggested for companies to try to reduce the amount of negative eWOM online and keep tracking negative eWOM in important discussion forums, electronic bulletin board, or news groups. Manufacturers should also allocate marketing budget and professional staffs to minimize the effects of negative eWOM. For example, marketing and communication staffs can effectively reply to the negative product comments by clarifying misunderstandings, explaining the reasons, or committing a timetable to improve products or services. Moreover, they can launch certain public relation or advertising campaigns to rebuild the brand image. Both Ownes (1997) and Smith and Vogt (1995) revealed that when an ad is continued after negative eWOM, it can reduce certain amounts of effects of negative eWOM, although the discount effects are limited.

Third, although the importance of eWOM is attached to the diffusion of innovations, both marketing professionals and researchers need to beware of its limitation in affecting attitude toward the ad and purchase intention. eWOM cannot solely determine the attitude toward the ad and purchase intention. To improve consumers' attitude toward the ad, product providers should also pay attention to ad designs, ad claims, and their own perceived images. For purchase intention or actual purchase, other factors such as purchase power and product relevance still work. Therefore, the first task of a new product or service diffusion is still to find the right target. eWOM only serves as

an effective promotion technique. For researchers, WOM or eWOM are not the only factor that leads to the diffusion of innovations. The actual adoption of a new product or service also rest on other conditions such as purchase power.

Fourth, it should be noted that eWOM effects rely on the satisfaction with many factors. From this study, it is suggested that the perceived credibility is a basic requirement of effective eWOM. Other studies also suggested that required trial experience, understandability, and persuasive reasoning are important features of effective eWOM (Park, Lee, & Han, 2004). When using eWOM as a marketing tool, manufacturers should ensure all these features of eWOM are met so they are effective. For example, an eWOM campaign can be initiated on a credible online community or led by webmasters and very active people in the community who are perceived believable. If an eWOM campaign is hosted on the manufacture's own website or a very commercial website, it may lose its effects. Moreover, the content of eWOM is supposed to reflect what potential consumers really care, which needs understanding of consumers. Finally, online customer comments as eWOM should be of high quality with specific and understandable reasons supported by facts. Very general online comments are less effective especially to consumers who process persuasive messages with scrutiny.

Fifth, although product involvement was not a question of interest in this study, it correlated to attitude toward the ad, attitude toward the brand, and purchase intention. Thus, product involvement is always important. It serves as a prerequisite of other marketing promotion technique. Product or service providers should always get

consumers involved in their product as a prerequisite of any promotions, otherwise their advertising or eWOM campaign turns to be useless.

Finally, this study provided evidence that the Hierarchy of Effects Model is an appropriated framework for WOM and eWOM research. The eWOM can be integrated with ads as treatment under this model or studied as an independent factor. Attitude toward the ad, attitude toward the brand, and purchase intention are three important variables that provide evidence of WOM and eWOM effects. Moreover, other covariates can be added to the experiment for better understanding the factors that determine the effects on attitudes and intentions. This way scholars know the broader picture of consumer decision making and the part played by WOM and eWOM in this process. One limitation of using the Hierarchy of Effects Model is that attitude toward the ad and purchase intention as measures were considered a little weaker than the attitude toward the ad because many factors other than eWOM can influence them. Also, although purchase intention correlates to actual purchase theoretically, it may not objectively reflect the actual purchase in practical life.

Strengths and Limitations

Few research have studied the effects of eWOM. Therefore, the first strength of this study is that it explored a new area. It extended the WOM research to the digital context and contributed to the Diffusion of Innovations Theory. Second, the experimental design was strong to ensure reliability and validity of the research. For example, subjects

who have prior experience with the netbook was excluded from the data analysis, several procedure were implemented to control the internal validity and desired bias. Third, this study carefully screened the raw data. Incomplete data and outliers were removed and hypotheses of ANCOVA were checked. This way improved the reliability of statistical results.

As most experimental research, this study also has some limitations on external validity. First, due to its exploratory nature, the sample size of this study was small. Only 111 raw cases were analyzed as the valid sample. It is possible that more responses will bring certain changes to the results.

Second, this study used college students as the sample. College students are the right target of the netbook and they have more online eWOM activities than others. Nevertheless, white-collar employees who usually travel are also potential target of the netbook. As a group of people with their own socioeconomic and cultural backgrounds, white-collar employees may see the selling points of the netbook differently. Therefore, the results of this study can only be generalized to other groups of people with caution.

Third, the product used in this study was particular. First, the netbook is an emerging product category to most people. When this product matures in the market, it is likely eWOM may not possess much influence on consumers' attitude when they have already built their own attitude because WOM effects are limited when preexisting attitudes exist (Wilson & Peterson, 1989). Thus, it is suggested that eWOM affects a product differently depending on its diffusion stage. Moreover, the netbook is a high

involvement product category since it is relatively complex and expensive. It is possible that eWOM may not be an appropriate promotion tools for low involvement products. Therefore, the results of this study cannot be simply generalized to other product or service categories.

Fourth, the eWOM treatment used in this study was printed on paper but not online. Although this tries to mimic online customer reviews, subjects may perceive eWOM differently in a real internet environment. Besides, the eWOM treatment contained one-side online customer reviews, either positive or negative. In real life, people are more likely to encounter mixed eWOM.

Finally, the dependent variables were measured immediately after exposure to treatment. However, consumer decision making, especially the actual purchase, usually takes a long period. The eWOM may not be effective if the eWOM needs to be retrieved from memory (Smith & Vogt, 1995). Hence, a longitudinal study that tracks the sales change as a measure of eWOM effects would be useful.

CHAPTER 6. CONCLUSION

Marketing and advertising professionals generally believe eWOM is effective in consumer decision making. They are also trying to adopt eWOM campaigns as a new way of promoting products and services. This exploratory study provided partial evidence to support their beliefs. As a perceived non-commercial message which involving product or service discussion, eWOM does possess certain influences on consumers' attitudes and purchase intentions. However, the effects of positive eWOM are very limited if consumers are already exposed to certain promotional messages. One point that should be noted is that negative eWOM is more detrimental, so the manufacturers should track negative eWOM and try to neutralize its effects. This study also uncovered the complexity of eWOM effects, which should be noticed by professionals. Based on the experiment, it is likely that the eWOM effects on changing attitude toward the brand are more direct and significant than the effects on attitude toward the ad and purchase intention. Thus, eWOM must be used with other marketing techniques that contribute to the change of attitude toward the ad and purchase intention or actual purchase. Besides, the effectiveness of eWOM may rest on the fulfillment of other antecedents such as perceived credibility, required information provided, and high quality argument. A general statement of good or bad may not influence consumers.

Theoretically, this study extended the study of WOM to eWOM at the advent of digital age. Similar to traditional WOM, eWOM is also a key factor in the diffusion of

innovation process. The eWOM may help changing the attitude toward the new product or service, which is believed to lead to adoption. However, whether eWOM is as effective as traditional WOM in promoting adoption remains a question because eWOM may possess less credibility than WOM. Another contribution of this study was to set an example of using the Hierarchy of Effects Model to study the effects of eWOM. Like Barry (2002) argued, the Hierarchy of Effects Model is a useful framework for not only advertising effects study but also other promotion techniques, for example, WOM and eWOM.

Methodologically, this study used a laboratory experiment to test the eWOM effects. It provides to future relevant studies ideas and experiences of experimental design, instrument design, and procedure design.

This exploratory study provides basic understanding of eWOM effects on consumer attitudes and purchase intentions. Further research of eWOM effects can mainly reside in three aspects. First, marketing and advertising researchers may want to understand the effects of eWOM itself compared to an ad when eWOM is not integrated with the ad. Moreover, when eWOM is integrated with an ad, the order of eWOM and ad may also make a difference. For example, when consumers are exposed to an ad and then some negative eWOM, the negative eWOM may discount the ad effects. However, when some negative eWOM precede an ad, the ad is unlikely to substantially neutralize the negative effects since eWOM may lead to fairly strong belief strength on the product or services (Owens, 1997). Marketing and advertising professionals will also benefit from

this study. Sometimes, they may launch a WOM or eWOM campaign without other mass media promotion due to budget limits or they want to use advertising or other mass communication campaign to minimize the effects of negative comments. This kind of study can be done by involving more experimental groups in which subjects are exposed to the ad only, positive eWOM only, negative eWOM only, an ad and positive eWOM, and ad and negative eWOM, and negative eWOM and an ad.

The second aspect of further eWOM research is on the antecedents of eWOM effects. The result of this study suggested that eWOM is not simply effective as most marketers believe, rather, its effectiveness is contingent on other factors. Research questions regarding this area may be proposed as when the eWOM has high perceived credibility or what types of eWOM messages are effective. This information may help marketing and advertising researchers and professionals to understand more about the complexity of eWOM effects better. The studies can be done by comparing different types of eWOM messages. For instance, the effects of eWOM with clear reasoning and strong argument can be compared to the effects of eWOM with very general evaluation statement, or the effects of eWOM on a very commercial website can be compared to the effects of eWOM on an independent discussion forum.

Finally, the effects of eWOM can be compared to the effects of other personal product recommendations or comments. For example, the eWOM effects can be compared to WOM effects. It is possible that WOM possesses stronger effects than eWOM since WOM spreads between homogenous people but eWOM is communicated

in heterophilous networks. Another example would be the comparison with eWOM and messages of spokespersons. It would be interesting to see which type of message is more effective.

APPENDICIES

Appendix A. Instruments

Appendix B. Results of Statistic Analysis

School-Mate Netbook

Great for College Student!

Catapult to the forefront of technology with **School-Mate Netbook**, the great netbook for college students. It has the newest Intel Atom N280 processor, with up to 8 hours of battery life, which enables you to bring internet and multimedia wherever you go. Furthermore, its 10-inch display, 3.2 pound lightweight chassis, flush fitting battery pack will allow you to work on campus and travel in absolute comfort for hours.

School-Mate is your perfect companion to keep you connected to your emails, instant messenger, favorite blogs, online music and video, and surfing the web. Pre-loaded with Microsoft Windows XP and Microsoft Works also help you complete your college work. AND the most important, it only costs you **\$340!**

Key Features

Processor

Intel Atom N280 with 1.66 GHz processing speed, 667 MHz front-side-bus, and Hyper-Threading Technology provide high performance in multi-tasking environments.

Software

Pre-installed Microsoft Windows XP offers users an enhanced and innovative experience that incorporates Windows Live Messenger for instant messaging and Windows Live Mail for consolidated email accounts

Pre-installed Microsoft Works 9.0 enables easy sharing and editing your paper and spreadsheet

Battery Life

The more energy efficient Atom N280 processor and the School-Mate energy saving technology offer an up to 8 hours battery life.

Size and Weight

Great size with 10-inch (diagonal) LED screen and a 92%-sized keyboard

The School-Mate is easy to carry at only 3.2 lbs.

Connectivity

802.11n Wi-Fi provides fast connectivity to emails, blogs, online music and videos, other websites to ensure perfect online surfing experiences.

Storage and Memory

160 GB Hard drive and 1 GB RAM (upgradable)



Figure A1. The Mock Advertisement Used in Experiment.

Light weight and small screen qualifies this "on-the-road" machine! April 25, 2009, By Adam

I tried this product for four days and it was great! The weight quoted for the School-Mate includes the battery. The unit is very light for everyday use on the road.

Not too much scrolling on this 10 inch machine. The screen is not too small or too big. I haven't had issue navigating web pages and various documents. Using minimal toolbars helps to maximize the available screen, and this was easily accomplished.

Epic battery life, April 15, 2009, By fast drummer

The battery life is pretty close to what's advertised even though I didn't make any power adjustments. 7.5 hours is that I was able to get from this device.

I love this netbook, great performance. April 10, 2009, By G. Elderman

It ran so fast that there was no latency. It took less than 6 seconds to open the browser and show the home page. Also, when you stream an internet TV the picture gets pretty smooth with no glitches or slow down. The same when I edit my paper. Windows XP and Microsoft Works work easily on this device. Then I upgraded to 2 GB memory and I got higher performance!

80211. N rocks! April 7, 2009, By Captain

This is a really good product. I had no problem finding connections at home and on campus with 80211.N and it worked very well. Flawless and fast web surfing.

Price is unbeatable! April 1, 2009, By Fiona

I have looked at several netbooks. I would say with these features and specs, \$340 is enticing for me as a student.

Figure A2. Positive Online Customer Reviews of the School-Mate Netbook Used in Experiment.

Heavy weight and small screen disqualifies this "on-the-road" machine! April 25, 2009, By Adam

I tried this product for four days and sent it back! The weight quoted for the School-Mate obviously doesn't include the battery because when the battery is installed, the unit is way too heavy for everyday use on the road

Way too much scrolling on this 10 inch machine and even worse many programs including MS Outlook have modal windows that are truncated and when you tab thru the controls the window doesn't automatically scroll there as you tab.

Short lived battery, April 15, 2009, By fast drummer

The battery life is not that great as it's advertised even though I have made all power adjustments. 4 hours is maximum that I was able to get from this device.

I wanted to love this netbook, but, terrible performance, April 10, 2009, By G. Elderman

It ran so slowly that there was latency when I typed in Outlook. It would take 15+ seconds to open the browser and show the page. Also, when you stream an internet TV the picture could get jerky...Same things also happened when I edited my paper. Seems Windows XP and Microsoft Works don't work smoothly on this device. I upgraded to 2 GB memory and then downgraded back to the 1 GB RAM. Honestly, about the same performance.

80211. N Issues, April 7, 2009, By Captain

This is a fairly good device. However, there seems to be an issue with 80211.N and the 5GHz spectrum. As soon as I select 2.4, all is good. Like others, I bought this to work with my 5GHz Home network that is much faster and has better range in my home than the 2.4GHz network.

Price is still too high, April 1, 2009, By Fiona

I have looked at several netbooks. I would say with these features and specs, \$340 is still too expensive for me as a student.

Figure A3. Negative Online Customer Reviews of the School-Mate Netbook Used in Experiment.

PART I: Please rate the following scales based on the advertisement and online customer comments about the School-Mate Netbook,

For me, a netbook is

unimportant	_____	_____	_____	_____	_____	_____	_____	important
	-3	-2	-1	0	+1	+2	+3	
no concern to me	_____	_____	_____	_____	_____	_____	_____	great concern to me
	-3	-2	-1	0	+1	+2	+3	
insignificant	_____	_____	_____	_____	_____	_____	_____	significant
	-3	-2	-1	0	+1	+2	+3	
means nothing to me	_____	_____	_____	_____	_____	_____	_____	means a lot to me
	-3	-2	-1	0	+1	+2	+3	
does not matter	_____	_____	_____	_____	_____	_____	_____	matters to me
	-3	-2	-1	0	+1	+2	+3	

My impression is that the School-Mate Netbook is

ineffective	_____	_____	_____	_____	_____	_____	_____	effective
	-3	-2	-1	0	+1	+2	+3	
unhelpful	_____	_____	_____	_____	_____	_____	_____	helpful
	-3	-2	-1	0	+1	+2	+3	
not fun	_____	_____	_____	_____	_____	_____	_____	fun
	-3	-2	-1	0	+1	+2	+3	
unnecessary	_____	_____	_____	_____	_____	_____	_____	necessary
	-3	-2	-1	0	+1	+2	+3	
dull	_____	_____	_____	_____	_____	_____	_____	exciting
	-3	-2	-1	0	+1	+2	+3	
unenjoyable	_____	_____	_____	_____	_____	_____	_____	enjoyable
	-3	-2	-1	0	+1	+2	+3	
impractical	_____	_____	_____	_____	_____	_____	_____	practical
	-3	-2	-1	0	+1	+2	+3	
not functional	_____	_____	_____	_____	_____	_____	_____	functional
	-3	-2	-1	0	+1	+2	+3	
not thrilling	_____	_____	_____	_____	_____	_____	_____	thrilling
	-3	-2	-1	0	+1	+2	+3	
not delightful	_____	_____	_____	_____	_____	_____	_____	delightful
	-3	-2	-1	0	+1	+2	+3	

Assuming that this product will soon be available locally, how likely is it that you will buy the School-Mate Netbook?

never	_____	_____	_____	_____	_____	_____	_____	definitely
	-3	-2	-1	0	+1	+2	+3	

improbable	_____	_____	_____	_____	_____	_____	_____	probable
	-3	-2	-1	0	+1	+2	+3	
do not intend	_____	_____	_____	_____	_____	_____	_____	intend to buy
	-3	-2	-1	0	+1	+2	+3	
unlikely	_____	_____	_____	_____	_____	_____	_____	likely
	-3	-2	-1	0	+1	+2	+3	

I think the advertisement about the School-Mate Netbook is

bad	_____	_____	_____	_____	_____	_____	_____	good
	-3	-2	-1	0	+1	+2	+3	
unfavorable	_____	_____	_____	_____	_____	_____	_____	favorable
	-3	-2	-1	0	+1	+2	+3	
unpleasant	_____	_____	_____	_____	_____	_____	_____	pleasant
	-3	-2	-1	0	+1	+2	+3	
unlikable	_____	_____	_____	_____	_____	_____	_____	likeable
	-3	-2	-1	0	+1	+2	+3	

Generally, the online customer comments that you have just read considered the School-Mate Netbook as

unfavorable	_____	_____	_____	_____	_____	_____	_____	favorable
	-3	-2	-1	0	+1	+2	+3	
bad	_____	_____	_____	_____	_____	_____	_____	good
	-3	-2	-1	0	+1	+2	+3	
negative	_____	_____	_____	_____	_____	_____	_____	positive
	-3	-2	-1	0	+1	+2	+3	
unlikable	_____	_____	_____	_____	_____	_____	_____	likeable
	-3	-2	-1	0	+1	+2	+3	

PART II: Now we would like to know a little about you for clarification purpose. Please rate the following scale and circle the answers of last two questions.

Nowadays, people may look at product reviews and comments posted by previous consumers as purchase references. The scale below is to ask your perception on these online consumer reviews and comments.

Generally speaking, as a source of product information, I think product reviews posted online by customers are

unreliable	_____	_____	_____	_____	_____	_____	_____	reliable
	-3	-2	-1	0	+1	+2	+3	
undependable	_____	_____	_____	_____	_____	_____	_____	dependable
	-3	-2	-1	0	+1	+2	+3	

dishonest	_____	_____	_____	_____	_____	_____	_____	honest
	-3	-2	-1	0	+1	+2	+3	
insincere	_____	_____	_____	_____	_____	_____	_____	sincere
	-3	-2	-1	0	+1	+2	+3	
untrustworthy	_____	_____	_____	_____	_____	_____	_____	trustworthy
	-3	-2	-1	0	+1	+2	+3	
Have you used a netbook before? Yes No								
Gender: Male Female								

Figure A4. Questionnaire Used in the Positive and Negative eWOM Groups

PART I: Please rate the following scales based on the advertisement and online customer comments about the School-Mate Netbook,

For me, a netbook is

unimportant	_____	_____	_____	_____	_____	_____	_____	important
	-3	-2	-1	0	+1	+2	+3	
no concern to me	_____	_____	_____	_____	_____	_____	_____	great concern to me
	-3	-2	-1	0	+1	+2	+3	
insignificant	_____	_____	_____	_____	_____	_____	_____	significant
	-3	-2	-1	0	+1	+2	+3	
means nothing to me	_____	_____	_____	_____	_____	_____	_____	means a lot to me
	-3	-2	-1	0	+1	+2	+3	
does not matter	_____	_____	_____	_____	_____	_____	_____	matters to me
	-3	-2	-1	0	+1	+2	+3	

My impression is that the School-Mate Netbook is

ineffective	_____	_____	_____	_____	_____	_____	_____	effective
	-3	-2	-1	0	+1	+2	+3	
unhelpful	_____	_____	_____	_____	_____	_____	_____	helpful
	-3	-2	-1	0	+1	+2	+3	
not fun	_____	_____	_____	_____	_____	_____	_____	fun
	-3	-2	-1	0	+1	+2	+3	
unnecessary	_____	_____	_____	_____	_____	_____	_____	necessary
	-3	-2	-1	0	+1	+2	+3	
dull	_____	_____	_____	_____	_____	_____	_____	exciting
	-3	-2	-1	0	+1	+2	+3	
unenjoyable	_____	_____	_____	_____	_____	_____	_____	enjoyable
	-3	-2	-1	0	+1	+2	+3	
impractical	_____	_____	_____	_____	_____	_____	_____	practical
	-3	-2	-1	0	+1	+2	+3	
not functional	_____	_____	_____	_____	_____	_____	_____	functional
	-3	-2	-1	0	+1	+2	+3	
not thrilling	_____	_____	_____	_____	_____	_____	_____	thrilling
	-3	-2	-1	0	+1	+2	+3	
not delightful	_____	_____	_____	_____	_____	_____	_____	delightful
	-3	-2	-1	0	+1	+2	+3	

Assuming that this product will soon be available locally, how likely is it that you will buy the School-Mate Netbook?

never	_____	_____	_____	_____	_____	_____	_____	definitely
	-3	-2	-1	0	+1	+2	+3	

improbable	_____	_____	_____	_____	_____	_____	_____	probable
	-3	-2	-1	0	+1	+2	+3	
do not intend	_____	_____	_____	_____	_____	_____	_____	intend to buy
	-3	-2	-1	0	+1	+2	+3	
unlikely	_____	_____	_____	_____	_____	_____	_____	likely
	-3	-2	-1	0	+1	+2	+3	

I think the advertisement about the School-Mate Netbook is

bad	_____	_____	_____	_____	_____	_____	_____	good
	-3	-2	-1	0	+1	+2	+3	
unfavorable	_____	_____	_____	_____	_____	_____	_____	favorable
	-3	-2	-1	0	+1	+2	+3	
unpleasant	_____	_____	_____	_____	_____	_____	_____	pleasant
	-3	-2	-1	0	+1	+2	+3	
unlikable	_____	_____	_____	_____	_____	_____	_____	likeable
	-3	-2	-1	0	+1	+2	+3	

PART II: Now we would like to know a little about you for clarification purpose. Please rate the following scale and circle the answers of last two questions.

Nowadays, people may look at product reviews and comments posted by previous consumers as purchase references. The scale below is to ask your perception on these online consumer reviews and comments.

Generally speaking, as a source of product information, I think product reviews posted online by customers are

unreliable	_____	_____	_____	_____	_____	_____	_____	reliable
	-3	-2	-1	0	+1	+2	+3	
undependable	_____	_____	_____	_____	_____	_____	_____	dependable
	-3	-2	-1	0	+1	+2	+3	
dishonest	_____	_____	_____	_____	_____	_____	_____	honest
	-3	-2	-1	0	+1	+2	+3	
insincere	_____	_____	_____	_____	_____	_____	_____	sincere
	-3	-2	-1	0	+1	+2	+3	
untrustworthy	_____	_____	_____	_____	_____	_____	_____	trustworthy
	-3	-2	-1	0	+1	+2	+3	

Have you used a netbook before? Yes No

Gender: Male Female

Figure A5. Questionnaire Used in the Ad Only (control) Group

Appendix B. Results of Statistic Analysis

Table B1. Descriptive Statistics of Variables in Each Group

	No eWOM (<i>n</i> = 36)	Positive eWOM (<i>n</i> = 39)	Negative eWOM (<i>n</i> = 36)
Product Involvement			
Mean	.8667	1.2667	-.1167
Median	.9000	1.0000	-.3000
Std. Deviation	1.15437	1.10151	1.58736
Variance	1.333	1.213	2.520
Perceived Credibility of eWOM in General			
Mean	1.1389	1.1846	.4833
Median	1.0000	1.0000	.6000
Std. Deviation	.77063	.97050	1.04019
Variance	.594	.942	1.082
Attitude toward the Ad			
Mean	1.0417	1.3462	.8681
Median	1.0000	1.2500	1.0000
Std. Deviation	1.04796	1.22557	1.37385
Variance	1.098	1.502	1.887

Table B1. (Cont.)

Attitude toward the Brand			
Mean	1.2028	1.3795	-.3944
Median	1.0000	1.4000	-.3500
Std. Deviation	.75687	.66340	1.15188
Variance	.573	.440	1.327
Purchase Intention			
Mean	-.3056	.0385	-1.6111
Median	-.5000	.0000	-2.000
Std. Deviation	1.45787	1.61667	1.51356
Variance	2.215	2.614	2.291

Table B2. Descriptive Statistics of Variables in Each Group after Outliers were Removed

	No eWOM (<i>n</i> = 35)	Positive eWOM (<i>n</i> = 38)	Negative eWOM (<i>n</i> = 32)
Product Involvement			
Mean	.8057	1.2526	-.0250
Median	.8000	1.0000	-.1000
Std. Deviation	1.11089	1.11276	1.55148
Variance	1.234	1.238	2.407
Perceived Credibility of eWOM in General			
Mean	1.1829	1.1632	.4500
Median	1.0000	1.0000	.6000
Std. Deviation	.73464	.97050	1.0006
Variance	.540	.949	1.001
Attitude toward the Ad			
Mean	1.1214	1.4605	1.1953
Median	1.0000	1.2500	1.2500
Std. Deviation	.94591	1.00929	.91302
Variance	.895	1.109	.834

Table B2. (Cont.)

Attitude toward the Brand			
Mean	1.2314	1.3711	-.2406
Median	1.0000	1.3500	-.3000
Std. Deviation	.74785	.67018	.92418
Variance	.559	.449	.854
Purchase Intention			
Mean	-.2571	-.0132	-1.6094
Median	-.5000	.0000	-2.000
Std. Deviation	1.44950	1.60547	1.36183
Variance	2.101	2.578	1.855

Table B3. Descriptive Statistics of Logarithm Attitude toward the Brand in Each Group

	No eWOM (<i>n</i> = 35)	Positive eWOM (<i>n</i> = 38)	Negative eWOM (<i>n</i> = 32)
Attitude toward the Brand			
Mean	.7144	.7268	.5609
Median	.6990	.7283	.5682
Std. Deviation	.06117	.05445	.11729
Variance	.004	.003	.014

Table B4. Pairwise Comparisons of Attitude toward the Ad among Three Groups

Group	Mean	Adjusted Mean	Adjusted Mean Differences		
			1	2	3
1. Ad only (no eWOM)	1.1214	1.040	--		
2. Ad and positive eWOM	1.4605	1.295	.255	--	
3. Ad and negative eWOM	1.1953	1.482	.442	.187	--

Table B5. ANCOVA for Attitude toward the Ad by Group

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	Partial Eta Squared
Product Involvement	6.269	1	6.269	7.983	.006	.074
Perceived Credibility	6.191	1	6.191	7.883	.006	.073
Group	2.992	2	1.496	1.905	.154	.037
Error	78.535	100	.785			
Total	264.750	105				

Table B6. Pairwise Comparisons of Logarithm Attitude toward the Brand among Three Groups

Group	Mean	Adjusted Mean	Adjusted Mean Differences		
			1	2	3
1. Ad only (no eWOM)	.7144	.711	--		
2. Ad and positive eWOM	.7268	.713	.002	--	
3. Ad and negative eWOM	.5609	.582	-.129*	-.131**	--

* $F(1, 100) = 42.986, p < .017$

** $F(1, 100) = 43.323, p < .017$

Table B7. ANCOVA for Logarithm Attitude toward the Brand by Group

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	Partial Eta Squared
Product Involvement	.091	1	.091	16.194	.000	.139
Perceived Credibility	.003	1	.003	.531	.468	.005
Group	.302	2	.151	26.999	.000	.351
Error	.560	100	.006			
Total	48.663	105				

Table B8. Pairwise Comparisons of Purchase Intention among Three Groups

Group	Mean	Adjusted Mean	Adjusted Mean Differences		
			1	2	3
1. Ad only (no eWOM)	-.2571	-.372	--		
2. Ad and positive eWOM	-.0132	-.382	-.01	--	
3. Ad and negative eWOM	-1.6094	-1.045	-.673	-.663	--

Table B9. ANCOVA for Purchase Intention by Group

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	Partial Eta Squared
Product Involvement	52.687	1	52.687	33.67	.000	.252
Perceived Credibility	5.887	1	5.887	3.756	.055	.036
Group	7.995	2	3.997	2.555	.083	.049
Error	156.482	100	1.565			
Total	274.062	105				

REFERENCE

- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl, & J. Beckmann (Eds.), *Action control: From cognition to behavior*. (pp. 11-39). Berlin: Springer-Verlag.
- Arndt, J. (1967). Role of product conversations in the diffusion of a new product. *Journal of Marketing Research*, 4, 291-295.
- Barry, T (2002). In defense of the hierarchy of effect: A rejoinder to Weilbacher. *Journal of Advertising Research*, 42, 44-47.
- Barry, T., & Howard, D. (1990). A review and critique of the hierarchy of effects in advertising. *International Journal of Advertising*, 9, 121-135.
- Bickert, B. & Schindler. M. R. (2001). Internet forum as influential sources of consumer information. *Journal of Interactive Marketing*, 15, 31-40.
- Bone, P. F. (1995). Word-of-mouth effects on short-term and long-term product judgments. *Journal of Business Research*, 32, 213-223.
- Brown, J. J., & Reinen, H. P. (1987). Social ties and word-of-mouth referral behavior. *Journal of Consumer Research*, 14, 350-362.
- Buttle, A. F. (1998). Word of mouth: Understanding and managing referral marketing. *Journal of Strategic Marketing*, 6, 241-254.
- Clark, D. (2008, April 8). PC makers race to market with low-cost 'netbooks'. *The Wall Street Journal*.
- Coleman, S. J., Katz, E., Menzel, H. (1966). *Medical Innovation: A Diffusion Study*. New York: Bobbs-Merrill.
- Cong, L. (2007). *Adaptation and application: Hierarchy of effects models and internet*

- advertising*. Paper presented at annual meeting of the Academy of Advertising Association.
- Day, S. G. (1971). Attitude change, media and word of mouth. *Journal of Advertising Research, 11*, 31-40.
- Dellarocas, C. (2003). The digitalization of word of mouth: Promise and challenges of online feedback mechanisms. *Management Science, 49*, 1407-1424.
- Deloitte. (2009). *Technology Predictions: TMT Trends 2009*. Retrieved Apr 15, 2009, from <http://www.deloitte.co.uk/TMTPredictions/technology/Disrupting-the-PC-the-rise-of-the-netbook.cfm>
- Dichter, E. (1966). How word-of-mouth advertising works. *Harvard Business Review, 44*, 147.
- Flynn, R. L., Goldsmith, E. R., & Eastman, K. J. (1996). Opinion leaders and opinion seekers: Two new measurement scales. *Journal of the Academy of Marketing Science, 24*, 137-147.
- Gatignon, H., & Robertson, T. (1985). A propositional inventory for new diffusion research. *Journal of Consumer Research, 12*, 849-867.
- Gladwell, M. (2002). *The tipping point: How little things can make a big difference*. New York: AMACOM.
- Greenwald, A., & Leavitt, C. (1984). Audience involvement in advertising: Four levels. *Journal of Consumer Research, 11*, 581-592.
- Guernsey, L. (2000, February 3). Suddenly, everybody is an expert on everything. *The New York Times*.

- Halliday, J. (2008, October 2). Chevrolet goes viral for Aveo5. *The Adage*.
- Hennig-Thurau, T., Gwinner, K. P., Walsh, G., & Gremler, D. D. (2004). Electronic word-of-mouth via consumer-opinion platforms: What motivates consumers to articulate themselves on the Internet? *Journal of Interactive Marketing, 18*, 38-52.
- Hennig-Thurau, T., & Walsh, G. (2004). Electronic word-of-mouth: Motives for and consequences of reading customer articulations on the Internet? *International Journal of Electronic Commerce, 8*, 51-74.
- Herr, P. M., Kardes, F. R., Kim, J. (1991). Effects of word-of-mouth and product attribute information on persuasion: An accessibility-diagnostics perspective.. *Journal of Marketing Research, 4*, 291-295.
- Holbrook, B. M., & Rajeev, B. (1987). Assessing the Role of Emotions as Mediators of Consumer Responses to Advertising. *Journal of Consumer Research, 14*, 404-420.
- Karkati, M. A., & Karkati, G. j.(2004). Stealth marketing: How to reach consumers surreptitiously. *California Management Review, 46*, 6-22.
- Krugman, E. H. (1965). The impact of television advertising: Learning without involvement. *Public Opinion Quarterly, 29*, 349-356.
- Lavidge, J. R., & Steiner, A. J. (1961). A model for predictive measurements of advertising effectiveness. *Journal of Marketing, 25*, 59-62.
- Lazarsfeld, F. P., Berelson, B., & Gaudet, H. (1944). *The people's choice: How the voter makes up his mind in a presidential election*. New York: Columbia University Press.
- MacKenzie, B. S. & Lutz, J. R. (1989). An Empirical Examination of the Structural Antecedents of Attitude toward the Ad in an Advertising Pretesting Context.

- Journal of Marketing*, 53, 48-65.
- Mittal, B. (1995). A comparative analysis of four scales of consumer involvement. *Psychology & Marketing*, 12, 663-682.
- Mitchell, A. A., & Olson, C. J. (1981). Are product beliefs the only mediator of advertising effect on Brand Attitude? *Journal of Marketing Research*, 18, 318-332.
- Muehling, D. D., Laczniak, N. R., Andrews, C. J. (1993). Defining, operationalizing, and in advertising research: A review. *Journal of Current Issues and Research in Advertising*, 15, 21-58.
- Murray, B. K. (1991). A test of service marketing theory: Consumer information acquisition activities. *Journal of Marketing*, 55, 10-25.
- Ohanian, R. (1990). Construction and validation of a scale to measure celebrity endorser's perceived expertise, trustworthiness, and attractiveness. *Journal of Advertising*, 19, 39-52.
- O'Keefe, J. D. (2002). *Persuasion: Theory and research*. Thousand Oaks, CA: Sage Publications.
- Owens, L. D. (1997). *The effects of integrating information from advertising and word of mouth on consumer processing and response to product information*. Unpublished doctoral dissertation. Kent State University.
- Park, D., Lee, J., & Han, I. (2007). The effects of online consumer reviews on consumer purchasing intention: The moderating role of involvement. *International Journal of Electronic Commerce*, 11, 125-148.
- Wilson, R. W., & Peterson, A. R. (1989). Some limits on the potency of word-of-mouth information. *Advances in Consumer Research*, 16, 16-29.

- Phelps, J. E., Lewis, R., Mobilio, L., Perry, D., & Raman, N. (2004). Viral marketing or electronic word-of-mouth advertising: Examining consumer responses and motivations to pass along email. *Journal of Advertising Research, 44*, 333-348.
- Porter, L., & Golan, J. G. (2006). From subservient chickens to brawny men: A comparison of viral advertising to television advertising. *Journal of Interactive Advertising, 6*, 32-38.
- Ray, L. M., Alan, G. S., Michael L. R., Roger M. H., Edward C. S., & Jerome B. R. (1973). Marketing Communication and the Hierarchy of Effects. In Peter, C. (Eds.), *New Models for Mass Communication Research* (pp. 147-176). Beverly Hills, CA: Sage Publishing.
- Riegner, C. (2007). Word of mouth on the web: The impact of Web 2.0 on consumer purchase decisions. *Journal of Advertising Research, 47*, 436-447.
- Rogers, M. E. (2003). *Diffusion of innovations*. New York: Free Press.
- Rozen, E. (2000). *The anatomy of buzz: How to create word of mouth marketing*. New York: Doubleday/Currency.
- Silverman, G. (2001). *The secrets of word-of-mouth marketing: How to trigger exponential sales through runaway word of mouth*. New York: AMACOM.
- Smith, E. R., & Vogt, A.C. (1995). The effects of integrating advertising and negative word-of-mouth communications on message processing and response. *Journal of Consumer Psychology, 4*, 133-152.
- Sohn, D., & Leckenby, D. J. (2005). *Product class knowledge as a moderator of consumers' electronic word-of-mouth behavior*. Paper presented at annual meeting of the Academy of Advertising Association.

- Spears, N., & Singh, N. S. (2004). Measuring attitude toward the brand and purchase intention. *Journal of Current Issues and Research in Advertising*, 26, 54-66.
- Tabachnick, G .B. & Fidell, S. L. (1989). *Using Multivariate Statistics*. New York: Harper & Rwo.
- Tabachnick, G .B. & Fidell, S. L. (2001). *Computer-Assisted Research Design and Analysis*. Needham Heights, MA: Allyn & Bacon.
- Valente, W. T. (1995). *Network Models of the Diffusion of Innovations*. Creskill, NJ: Hampton Press.
- Vilpponen, A., Winter, S., & Sundqvist, S. (2006). Electronic word-of-mouth in online environments: Exploring referral network structure and adoption behavior. *Journal of Interactive Marketing*, 6, 71-86.
- Voss, E. K., Spangenberg, R. E., & Grohmann, B. (2003). Measuring the hedonic and utilitarian dimensions of consumer attitude. *Journal of Marketing Research*, 11, 310-320.
- Wangenheim, F., & Bayon, T. (2004). The effect of word of mouth on services: Measurement and moderating variables. *European Journal of Marketing*, 38, 1173-1185.
- Warren, E. W., & Gilbert, W. F. (1993). Compliant Intentions and behavior for product versus service. *Journal of Marketing Management*, 3, 12-22.
- Weilbacher, W. (2001). Point of view: Does advertising cause a “hierarchy of effects?” *Journal of Advertising Research*, 41, 19-26.
- Williams, J. R., & Hensel, P. J. (1991). Changes in physicians’ sources of pharmaceutical information: A review and analysis. *Journal of Health Care Marketing*, 11, 46-60.

- Yoo, Y. C., & Kim, K., Stout, A. P. (2004). Assessing the effects of animation in online banner advertising: Hierarchy of Effects Model. *Journal of Interactive Advertising*, 4, Retrieved Apr 15, 2009, from <http://www.jiad.org/article49>
- Zajonc, B. R., & Hazel, M. (1982). Affective and cognitive factors in preferences. *Journal of Consumer Research*, 9, 123-131.