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# Investigating community members' eWOM effects in Facebook fan page

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#### Abstract

**Purpose** – The purpose of this paper is to explore the model of enhancing the electronic word-ofmouth (eWOM) effects through the virtual community by discussing the relationship among sense of virtual community, social influence and eWOM effects.

**Design/methodology/approach** – This research adopted structural equation modeling to test the proposed model, and the structural model showed a good fit. This research sample consisted of 492 members who have used Facebook for at least half-a-year.

**Findings** – The results indicated that sense of virtual community had effects on normative influence, informative influence, and perceived eWOM review credibility. Both social influence and perceived eWOM review credibility had effects on eWOM review adoption. Social influence in virtual community partially mediated the relationship between virtual community members' sense of virtual community and perceived eWOM review credibility. Virtual community members' perceived eWOM review credibility partially mediated the relationship between normative/informative influence and eWOM review adoption.

**Practical implications** – This study discussed conclusions and managerial implications of the findings. **Originality/value** – This research filled a void that most of the previous studies in this area focussed on a single social interaction perspective. The authors argued that community studies should incorporate and distinguish SOVC and social influence factors.

Keywords Virtual community, Social influence, Sense of virtual community, eWOM effects Paper type Research paper

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1. Introduction

In the marketing-related literature produced over the past 50 years, numerous scholars have argued that word-of-mouth (WOM) was a crucial research topic (Arndt, 1967; Brooks, 1957; Holmes and Lett, 1977; Lin, 2008; Martilla, 1971; Martin and Lueg, 2013; Sheth, 1971). WOM exerted considerable influence on the market (Martin and Lueg 2013; Whyte, 1954) particularly the promotion and distribution of products. Thus, employing the WOM effect is a more effective marketing approach than implementing traditional ones. Granitz and Ward (1996) pointed out that WOM and electronic word-of-mouth (eWOM) have different degree of impact. eWOM can deliver the message through not only one to one and one to many, but also non-synchronized. eWOM referred to the phenomenon in which consumers trusted the reviews provided

by other consumers who had the same interests as they did, rather than trusted advertisers or marketers (Blackshaw, 2006; Sen and Lerman, 2007). WOM has gradually replaced the tradition of past general marketing communication tools – eWOM under operation with the internet (Trusov et al., 2009). Scholars in the field of advertisement discipline started to concern eWOM (Plummer, 2007). eWOM credibility in communities would be the main base to affect individuals processing these information cues (Weisfeld-Spolter *et al.*, 2014). WOM is the most crucial factor that influences consumers' adoption of product information. Specifically, the influence exerted by WOM on consumer brand switching is: first, seven times greater than that exerted by newspapers; second, four times greater than that exerted by sellers' promotion; and three, two times greater than that exerted by advertisement broadcasting (Katz and Lazarsfeld, 1955). Additionally, in the process of facilitating consumers' attitude changed from negative, to neutral and then to positive, the effect produced by WOM dissemination was nine times more than that produced by advertisements (Katz and Lazarsfeld, 1955). The influence of WOM on the decision-making process of consumers has been widely known by the researchers and practitioners. Moreover, with the advent of the internet, the WOM effect has become more crucial (Bickart and Schindler, 2001; Dellarocas, 2003; Henning-Thurau et al., 2004; Lee and Youn, 2009; Sun et al., 2006).

Social websites have rapidly become one of the most popular communication and entertainment tool in the society. Therefore, the eWOM behavior of internet users is increasingly active. In addition, the sophistication of the technology for developing social websites has been progressing, prompting business managers to consider how using social websites could increase commercial benefits (Trusov et al., 2009), which involved enhancing the interaction among the users of a brand, the users of other brands, and the users on the official social website page of a brand to increase the benefits generated by internet dissemination. For example, among all the Facebook users, the number of active users around the world has exceeded five million (Facebook, 2010). According to the data provided by CheckFacebook (2011) regarding the most recent number of Facebook users in every country, the top five countries that had the highest number of Facebook users in 2010 were the USA (94,748,820), the UK (22,261,080), Turkey (14,215,880), France (13,396,760), and Canada (13,228,380). In 2011, the top five countries were the USA (155,746,780), Indonesia (40,418,860), India (36,422,980), Turkey (30,735,100), and the UK (30,337,440). In 2010, Taiwan was listed as one of the top five countries where the number of Facebook users was most rapidly increasing (Web Mining, 2010). According to the Access Rating Online database analysis conducted by InsightXplorer Limited (2012), internet users exhibited a high degree of participation in virtual communities. Specifically, 61.1 percent of internet users have participated in online virtual communities. Among these users, 45.0 percent of them participated in activities in virtual communities through Facebook, 33.8 percent through forums, and 31.0 percent through blogs. Furthermore, Facebook members account for 1.4 percent of global usage, and this is continuously increasing. In the social network sites (SNSs), a feature of eWOM that distinguished it from traditional WOM marketing (a feature available because of the advances in internet technology) was that online users must only press several keys to send their WOM reviews to hundreds or thousands of people (Mangold and Faulds, 2009).

Regarding media exposure value, according to the calculations of the social media expert, Vitrue, the number of exposures produced by one million fans is equal to the media exposure value of US\$300,000 per month. For example, the fan page of US

eWOM effects in Facebook fan page Starbucks possesses 6.5 million fans. Combined with the purchase of major advertisements, the fan page can generate the media exposure value of US\$23.4 million a year. In other words, the average value of media exposure contributed by one fan was US\$3.6, and the value contributed by one million fans was US\$3.6 million (Adweek, 2010). Thus, the rapid increase of fans can generate great exposure benefits. In the practical field, firms create interaction and adherence with the fan page members through brand fan pages on Facebook, and combine online marketing activities with brand fan pages to bring advertisements from the virtual world to reality (Electronic Commerce Times, 2010). Because of the high achievement rate on Facebook, numerous firms and sellers have established fan pages to attract more people. Additionally, one advantage of establishing brand fan pages was that the managers could use fan pages to update fans regarding new products and activities (Social Media Marketing Co., 2011).

The decision-making references for social website members to purchase products include how brand companies communicate with consumers regarding product information through online socializing platforms, and whether consumers can exchange information and build interactive relationships with other community members through community platforms. In response to these two points, this study proposed two research aspects to understand the determining factors of the eWOM review adoption for social website members.

In the consideration of research gap, from a social interaction approach, studies regarding social communities have particularly emphasized the relationship between group interaction and social influence to express the consciousness produced in social communities. Collective consciousness represents the sense of belonging that members feel toward the community. Thus, members and a community can convey beliefs based on this sense of belonging. Members shared a common belief to fulfill their commitment to a community (McMillan and Chavis, 1986). In social interactive relationships, social website members are unable make decisions based on a single consideration of the decision itself; instead, the surrounding social groups and environment influence them, which is social influence. Therefore, this study regarded social influence as people's susceptibility to interpersonal influence. Thus, when individuals interact with other people in a group, others, resulting in the alteration of their thoughts or behaviors, influence them. This study divided social influence into normative influence and informative influence (Bearden et al., 1989; Deutsch and Gerard, 1955). In addition, this study hypothesized that social influence was the mediating factor between sense of virtual community and the eWOM effects.

The characteristics of the community website are frequent interactions between people. Other users would affect internet community users while interacting with them (Bearden *et al.*, 1989). Sense of virtual community was a relatively new study field (Blanchard, 2008; Blanchard and Markus, 2004; Tonteri *et al.*, 2011). Therefore, in recent years, there has been little research conducted the influence of sense of virtual community on cognition or behavior of community website users (e.g. Kim *et al.*, 2004; Martin-Niemi and Greatbanks, 2010; Wang and Tai, 2011). This study advocated that social influence factors was included in the sense of virtual community factors for investigation in order to completely understand the reason why the social interaction approaches generated eWOM effects for community users. This might help to understand the degree of sense of virtual community.

Katz and Lazarsfeld (1955) focussed on the origin of the WOM effects and investigated the situations in which consumers made purchase decisions according to

the opinions of other people. Previous studies have argued that users tended to accept suggestions offered by other members and thus modified their thoughts and behaviors when they adopted eWOM reviews. This showed the level of how interpersonal relationships influenced consumers (Chu and Kim, 2011; Lascu and Zinkhan, 1999). However, these studies typically focussed on online trust and information quality factors that might influence the eWOM review adoption.

Teng *et al.* (2014) indicated that few research studies had directly tested potential determinants of eWOM messages and perceived eWOM review credibility despite significant managerial and academic attention on eWOM in the social media context. Some researches focussed on eWOM effects or the factors of social influence without clarifying the causal relationships among constructs, such as consumers' attitudes toward products, attitudes toward websites, purchase intentions, and perceived eWOM review credibility (Cheung *et al.*, 2008; Doh and Hwang, 2009; Shin, 2009). In agreement with Cheung *et al.* (2009), this study proposed that perceived eWOM review credibility was the mediating factor between social influence (normative influence and informative influence) and eWOM review adoption, and that perceived eWOM review credibility was an essential antecedent of eWOM review adoption.

eWOM plays an influence role in social media marketing (Park and Kim, 2008; Park and Lee, 2009b), such as Facebook sharing and spreading information and building up fans relationships (Chang *et al.*, 2015; Cheung and Lee, 2010; Kim and Ko, 2012). Social media sites could express personal emotions and opinions, such as Facebook (like, comment, sharing) or YouTube (like, dislike) (Chang *et al.*, 2015; De Vriesa *et al.*, 2012; Yang, 2012). Especially Chang *et al.* (2015) and Hsu *et al.* (2015a, b) focus on the Facebook fan page as the research context. Chang *et al.* (2015) study the persuasive messages of users to click like and share messages behavior. In addition, Hsu *et al.* (2015b) focus on the interaction between Facebook fan pages among community members to study the effect of dual-identification on community citizenship behavior.

Cheung and Thadani (2012) conducted a systematic review on the researches of eWOM. They indicated 47 articles related to eWOM research from 2000 to 2010 and disclosed elaboration likelihood model (ELM, Petty and Cacioppo, 1986) and heuristic model heuristic-systematic model (HSM, Chaiken, 1980; Chaiken et al., 1989) being the two most commonly used theoretical models for the effects on eWOM in terms of theoretical basis of dual-route information processing. It was consistent with the result of ELM review related to the effectiveness of persuasive message in the context of social media (Teng et al., 2014). Teng et al. (2014) followed the study of WOM of Cheung and Thadani (2012). They identified 45 articles from 2011 to 2014 and indicated 22 articles investigating persuasive message of eWOM with eight articles focussing on the influence of eWOM in the internet context. Until 2015, Chang et al. (2015) study persuasive messages in social media marketing and Cheng and Ho (2015) explore online customer reviews influences on consumer purchasing decisions, still focus on the theoretical basis of research based on ELM. In summary, most researches used to adopt ELM or HSM as the theoretical basis to investigate the effect of persuasive eWOM messages on individual decision behavior in the first research vein. The second research vein explored the social interaction of interpersonal in the virtual communities. For example, Hsu et al. (2015a, b) focus on the interaction between communities and adopt the social identity theory as the theoretical basis for the development of research models. Jin and Phua (2014) applied social capital theory and social identity theory as the theoretical basis to understand consumers' purchasing intentions by experimental design. Therefore, this study adopted social influence

eWOM effects in Facebook fan page theory as the theoretical basis of the framework to explain the antecedents of persuasive eWOM messages and the consequences of online review adoption by applying the second type of research vein in order to further illustrate the objective of this study. In the following section, this study discussed literature review and derived research hypotheses as the basis for the development of research framework.

#### 2. Literature review and research hypotheses

#### 2.1 Community website and Facebook fans page

Social websites are a form of virtual communities. Users of social websites could establish their open personal information on the websites to interact and share common interests with their friends from the real world and with strangers on the internet (Kuss and Griffiths, 2011). Using the services provided on the internet, social websites primarily offered users three functions; first, establishing open or semi open personal information; second, establishing a list of users with whom they were willing to share information; and third, viewing and following the information provided by other users (Boyd and Ellison, 2008). A social website is defined as a website where members are provided with a Web 2.0 virtual community that involves the linking of social networks and the sharing of media content. Social websites can help users maintain their original social networks, and enable strangers with the same interests to establish connections. Based on this definition, the first social website originated in 1997, called SixDegrees. com, which provided a platform for users to establish personal information and a friend list. Although social websites have been appearing on the internet since 1997, it begun to be popular with users in 2003, and then several prominent social websites have been created since, including MySpace, LinkedIn, Flickr, Facebook, and YouTube. Apart from the original social functions, these social websites incorporated media-sharing functions (such as uploading photos and videos). Since then, social websites have caught people's attention, and the number of users has grown exponentially. The establishment of social websites such as Facebook and MySpace has altered the communication and interaction modes of internet users around the world. Facebook was the largest social website in the world (Boyd and Ellison, 2008; Chiu et al., 2008; Kuss and Griffiths, 2011; Nadkarni and Hoffman, 2012).

The Facebook fan page, introduced in 2007, is an open, personal profile that can help enterprises share enterprise news and product information to Facebook users. When members connect with their fan pages, the news feed linked with their pages is sent to their friends through a ticker. When the friends of these fans also interact with the fan pages, more tickers are further disseminated to a wider friend circle through WOM. Thus, Facebook is prominent not only because of its dramatic membership growth, but also because of its fan pages. According to the first large-scale fan page survey conducted by Sysomos Inc. (2009), which involved more than 630,000 Facebook fan pages, fan pages had an average of 4,596 fans, and fan page administrators typically created one wall post every 15.7 days. The number of fan page members is increasing rapidly.

The second Facebook fan page selection held by Business Next (2010) adopted popularity, page content, and long-term operation outcomes as the basis for selecting the most effectively used fan page. Fan pages can be used for communicating and sharing business advertising, commercial marketing, or professional knowledge. The members of firms, organizations, and club activities can post social or marketing events on the pages to announce upcoming events. Thereby, their friends and

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the viewers were informed of the dates and time of the events, and people with the eW same interests might be notified to participate in the events; thus, advertising could be achieved (Pempek *et al.*, 2009).

#### 2.2 Sense of virtual community

The original definition of the sense of virtual community is members' sense of belonging to the community and the communication of beliefs among members or between members and the community. Additionally, members possess a common belief to fulfill their commitment to the community. This definition comprises four elements, which are membership, influence, integration and fulfillment of needs, and shared emotional connection. These four elements were applied to the theory of sense of virtual community (Blanchard, 2007; Tonteri et al., 2011). Membership refers to the sense of belonging that members perceive toward a community. In a community, members share common symbols to satisfy the community requirements and receive recognition from other members. Influence refers to the influence exerted on members by the community or or members' perceived capability influence others other members. in the community. Integration and fulfillment of needs denotes that members believe that the information and help provided by the community and community members correspond to their needs; for example, they can acquire certain benefits or rewards after participating in community events. Shared emotional connection means that community members share common experiences, history, time, and space. In other words, the numerous events experienced by members and their satisfactory interactions could enhance their relationship between each other (Abfalter et al., 2011; Koh and Kim, 2003).

#### 2.3 Social influence

Social influence means when people cannot immediately make decisions, community members will be subject to/affected by the surrounding social groups environment to help individuals making purchase decisions. Social influence consists of numerous aspects. Because the focus of this study was on social websites to understand the interaction and influence among community members, social influence was regarded as the susceptibility between individual influences. Bearden et al. (1989) stated that when individuals were interacting with other people in a group, others influenced them, which resulted in change in their thoughts and behaviors. This process of change is social influence. Numerous scholars have proposed that others, for example, people with low self-esteem, are easily influenced by people with certain characteristics. The dual-process theory is a psychological theory regarding people's judgment when receiving information. The theory comprised two types of social influences, namely, normative and informative influences (Deutsch and Gerard, 1955). Normative influence referred to an individual adopting the thoughts and behaviors of the group with which they were affiliated according to the norms and other people's expectations to acquire the recognition of the groups (Deutsch and Gerard, 1955). Informative influence came from the verification of the reality of the obtained information, which involved how a person judged the received information, including the content, source, and other receivers (Hovland et al., 1953).

#### 2.4 Relationships between sense of virtual community and social influence

Sense of virtual community referred to people's various feelings generated from their experiences in virtual communities; from such feelings, they acquired a sense of

eWOM effects in Facebook fan page belonging and deep attachment to these communities (Blanchard and Markus, 2004; Koh and Kim, 2003; Tonteri *et al.*, 2011). Scholars noted that virtual community users' sense of belonging toward a community increased the normative and informative influences on them (Lee and Park, 2008). A sense of belonging was regarded as the precondition of the formation of interpersonal influences (i.e. normative and informative influences, Park and Feinberg, 2010). In virtual communities, a sense of virtual community can be generated from members' perceived similarities and their willingness to continuously interact with each other in the future; thus, their normative and informative influences in the virtual community were enhanced (Lascu and Zinkhan, 1999; Shen *et al.*, 2010). Based on the literature review, this study proposed the following hypothesis:

*H1.* In virtual community, members' sense of virtual community has significant and positive effects on (a) normative influence, (b) informative influence.

#### 2.5 eWOM effects

eWOM transfer uses a diversity of expressions stored in cyberspace. This advantage may make community members to acquire their desired message by utilizing the internet in accordance with their needs at any time and any place. In addition, Granitz and Ward (1996) indicated that the difference between traditional WOM and eWOM were in media, source link strength, quantity and content forms but their essences were the same (Hoffman and Novak 1996). In brief, the eWOM can deliver the message through one to one, one to many, or even non-synchronized. Community members can exchange the information of products or services anonymously with other members without the limitation of background, looks, status, and work restrictions, etc., on the internet. Katz and Lazarsfeld (1955) were the first scholars who researched the WOM effect. Scholars have investigated the situations in which consumers would make purchase decisions according to other people's opinions. The eWOM effects comprises users' judgment of the credibility of eWOM reviews and their decision whether to adopt the information in eWOM reviews. Moreover, consumers' attitudes toward the products and their future purchase intention were parts of the eWOM effects (Cheung et al., 2009; Doh and Hwang, 2009).

In this research, eWOM effects were divided into perceived eWOM review credibility and eWOM review adoption. The perceived eWOM reviews credibility was defined as the degree of the credibility of WOM information as perceived by internet users (Tseng and Fogg, 1999). Additionally, internet users' adoption of eWOM reviews was easily influenced by their interpersonal relationships, and they tended to accept suggestions provided by other members in the same community, thus altering their thoughts and behaviors (Chu and Kim, 2011; Lascu and Zinkhan, 1999).

#### 2.6 eWOM review credibility

eWOM review credibility meant the authenticity, practicality, or credibility of the perception of WOM or comments of receivers (Nabi and Hendriks, 2003). The key of adoption the eWOM review for receivers is the credibility of the perception of positive eWOM review. Receivers would be more confident about the reception of eWOM review or comments and made purchasing decisions more effective if the received messages were credible (Nabi and Hendriks, 2003). File *et al.* (1994) pointed out that it was common to search and utilize the information of WOM when consumers bought products and perceived high risk or intangible products. They can get information

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from eWOM to reduce their uncomfortable feelings or risks. Therefore, people would eW use the eWOM to seek assistance for the senses of trust about products they wanted to buy (Huang *et al.*, 2007).

#### 2.7 eWOM review adoption

Duhan et al. (1997) considered that adoption referred to the persuasiveness of WOM. In addition, consumers are likely to make the decision of buying based on the liking level of WOM. In the process of consumers online shopping, other members will make relevant comments regarding products. Consumers would treat these comments as their primary source of information to strengthen the emotional link with others effectively (Cui et al., 2010). Message adoption is one of the most important behavioral factors on online discussion board, because consumers will convert these messages from external message to internal knowledge and use these messages in the entire process of message adoption. For example, message adopters will use the online discussion board first to search relevant information, and adopt the cognition of personal similar experience to support the decision with helpful information before making any purchase decision (e.g. Nonaka, 1994; Pitta and Fowler, 2005). Consumers were more likely to use this information if they found this information useful in the context of shopping decisions (Cheung et al. 2008; Pövry, 2011). On the other hand, the use of eWOM was a complex variable and rich information, which consumers could make purchase decision easier (Pöyry, 2011).

#### 2.8 Relationships between sense of virtual community and eWOM review credibility

A sense of virtual community comprised diverse elements, including membership, influence, integration and fulfillment of needs, and shared emotional connection (Blanchard, 2007; Tonteri et al., 2011). Among the studies on the causes of eWOM, scholars have noted that social community members' cognitive or affective credibility for eWOM could be stimulated when they perceived positive self-enhancement, acquired social benefits, or expressed the willingness of concerning for other consumers or helping the company. Moreover, if consumers acquired satisfactory experiences with the information and source provided in the community, the credibility of positive WOM was also enhanced (Martin and Lueg, 2013; Ypa et al., 2013). Furthermore, Park and Lee (2009a) verified that the susceptibility of consumers and the previous online purchasing experiences resulted in the improvement of consumers' evaluation of eWOM, and the consumers thus purchased products because of eWOM. Therefore, in a virtual community, when the community members perceive their member value, obtain their cognitive or affective needs, are influenced by the environment or friends, and are willing to share emotional connection with others, their credibility of eWOM review is increased because of the sense of virtual community. Based on the literature, this study proposed the following hypothesis:

H2. In virtual community, members' sense of virtual community has significant and positive effect on perceived eWOM review credibility.

#### 2.9 Relationships between social influence and eWOM effects

In the literature related to information systems, the dual-process theory was commonly used to investigate people's adoption of the effect relationship for knowledge or information (Bhattacherjee and Sanford, 2006; Sussman and Siegal, 2003). According to

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the dual-process theory proposed by Deutsch and Gerard (1955), different types of social influences (normative and informative influences) affected the eWOM review adoption of internet users. However, previous studies have tended to ignore the mediating mechanism for the adoption of knowledge or information. Cheung *et al.* (2009) stated that the normative and informative factors generated in eWOM contributed by online consumers' recommendations substantially and positively influenced perceived eWOM review credibility. Chu and Kim (2011) investigated the eWOM effects in SNSs, observing that social website members were subject to normative or informative influences which further influenced eWOM in SNSs. Chu and Kim (2011) also proposed that the eWOM effects could be generally categorized as perceived eWOM review credibility and eWOM review adoption. In other words, normative and informative influences exert a substantial and positive influence on personal perceived eWOM review credibility and eWOM review adoption. Thus, based on the literature, this study proposed the following hypotheses:

- *H3.* In virtual community, members' (a) normative influence, (b) informative influence has significant and positive effects on perceived eWOM review credibility.
- *H4.* In virtual community, members' (a) normative influence, (b) informative influence has significant and positive effects on eWOM review adoption.

## 2.10 Relationships between perceived eWOM review credibility and eWOM review adoption

Due to the increasing number of online information sources, source credibility was a crucial factor that influenced consumers' perceived reliability of website content (Wathen and Burkell, 2002). This factor can help people identify adequate information from poor information sources. Hovland and Weiss (1951) proposed that the disseminators' credibility, attractiveness, appearance, familiarity, and power all were characteristics of information sources and might influence information credibility. Disseminators with more positive characteristics possessed a higher persuasiveness compared with those with fewer positive characteristics (Eagly and Chaiken, 1993). People tend to believe and accept information from highly credible sources. Thus, receivers seldom accepted the information from sources with low credibility (Grewal *et al.*, 1994). The eWOM effects refer to whether users decide to adopt eWOM reviews after judging the credibility of eWOM sources. The higher the perceived eWOM review credibility by social website users was, the more easily a eWOM review was adopted (Cheung *et al.*, 2008, 2009; Zhang and Watts, 2008). Thus, based on the literature, this study proposed the following hypothesis:

*H5.* In virtual community, members' perceived eWOM review credibility has significant and positive effect on eWOM review adoption.

#### 3. Research methodology

#### 3.1 Research model

This study divided the research structure into three parts. This study explored the individual behavior of fan page members affected by three levels of social influence processes (compliance, identification and internalization) based on the research of Kelman (1974). Compliance represents that an individual action is conformed with the views of others who are important to him/her. For example, fans may be influenced by

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the opinions of community members of the fan page or manager. This study included normative influence and informative influence for two factors of compliance. Identification refers to personal message of fan page such as sense of virtual community as an exogenous variable in this study. Internalization indicates that the impact of an individual consent is from fan page members because of the consistence of his/her reputation message of fan page (Dholakia *et al.*, 2004). For example, fans members may perceive eWOM review credibility and then convert to eWOM review adoption. Therefore, this study adopted the social influence theory to understand the behavior of eWOM review adoption of community members (Figure 1).

#### 3.2 Research design and data collection

Our target population was members of the Facebook Fans Page because Facebook was the largest virtual community in Taiwan. This research applied Google Docs (https:// drive.google.com) online service, a service without time and geographical limitation, to create online questionnaire and release on Facebook Fans Page and on the BBS station. Fans Page users could connect to the questionnaire through the link and conducted the survey.

This study collected 627 samples. From these, there were 492 usable samples yielding a response rate of 78.47 percent. Table I showed the demographic information of the respondents. The responses were male (53.05 percent) and female (46.95 percent). Among them, 57.11 percent were between 18 and 24 years of age, and the largest proportion of education background is bachelor/associate degree (65.65 percent). About 36.18 percent of the respondents had a Facebook history of one to two years, and almost all respondents had no more than four years of membership history. With respect to duration, 43.90 percent of users surfed Facebook three to five hours per day.

#### 3.3 Measure

This study aimed to explore the internet users' behavior in virtual communities. In order to assure the validity of the instrument, items used to measure the constructs were from scales developed in previous research. This study contained six parts of the measurement items in questionnaire, including five constructs of scale and

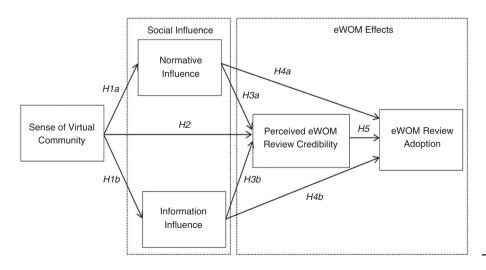


Figure 1. Research model

IMDS 116,5	Variable	Frequency	%
110,0	<i>Gender</i> Male Female	261 231	53.05 46.95
988	$\begin{array}{c} Age \\ < 17 \\ \hline 18.24 \\ 25.34 \\ 35.44 \\ 45.54 \\ > 55 \end{array}$		1.22 57.11 39.43 1.22 0.41 0.61
	<i>Education</i> High school Bachelor/associate Master PhD	24 323 141 4	4.88 65.65 28.66 0.81
	Contact with Facebook <1 year 1-2 years 2-3 years 3-4 years >4 years	36 178 153 84 41	7.32 36.18 31.10 17.07 8.33
Table I.           Demographics of respondents	Surf Facebook per day <1 hour 1-3 hours 3-5 hours 5-7 hours >7 hours	21 166 216 62 27	4.27 33.74 43.90 12.60 5.49

demographic variables. The items for sense of virtual community, normative influence, and informative influence were measured using a seven-point Likert scales ranging from strongly disagree (1) to strongly agree (7). The items for perceived eWOM review credibility and eWOM review adoption were measured using a five-point Likert scales ranging from strongly disagree (1) to strongly agree (5). Demographic variables were categorical data and measured using a single-item measure, including gender, age, education, contact with Facebook, and duration of surf time on Facebook per day (see Table I). In this study, there were total of 33 items for five constructs (see the Appendix).

#### 3.4 Sample validity

For precise reflection of Facebook users' population structure, this study used gender ratio of the sample structure to examine whether it matched population structure. According to the statistics from CheckFacebook (2013) on November 9, 2013, the gender proportion was divided as follows: 50.6 percent male users, and 49.4 percent female users. The result of  $\chi^2$  goodness-of-fit test showed the *p*-value of  $\chi^2$  is 1.180 (*p*-value = 0.277 > 0.050). Thus, the result could not reject the null hypothesis of the test. Therefore, there was no significant difference between sample structure and population

structure of Taiwanese Facebook users' gender ratio provided by CheckFacebook in ethis study.

Common method variance (CMV), also known as the single-source bias, can easily lead respondents with consistent response questionnaire to generate CMV problems especially samples are from a single source or all questions from same measurement (Avolio et al., 1991). It can effectively test the severity of the sources of bias related to CMV. This study conducted a two-stage procedure by dealing with prevention before the survey and detection the CMV problem after the survey. First, this study designed the questionnaire for survey in the following way: the constructs were arranged randomly, and the purpose of the research was not shown on the questionnaire. In addition, the survey was conducted anonymous for decreasing consistent answer from respondents (Podsakoff et al., 2003). Moreover, this study adopted different Likert-scale measurement for different constructs in the questionnaire to avoid all measurement of constructs with the same Likert-scale. Second, this study applied Harman's one-factor-test (Harman, 1967; Podsakoff and Organ, 1986) to examine whether CMV problem existing in the sample data, including exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). This study conducted EFA analysis with all items and extracted six factors. The explained variance proportion by the first factor was 42.333 percent, which was lower than 50 percent. Meanwhile, this study conducted CFA analysis with all items subsumed into one-factor, and the results showed not all factor loading of the items are significant (greater than 0.5). Furthermore, the model-fit of Harman's one-factor-test ( $\chi^2 = 4,264.755$ ; df = 495;  $\chi^2/df$  = 8.616; GFI = 0.514; AGFI = 0.449; RMSEA = 0.125; CFI = 0.655; NFI = 0.628) was worse than the model-fit of the hypothesized model ( $\chi^2 = 976.561$ ; df = 463;  $\chi^2/df = 2.109$ ; GFI = 0.889; AGFI = 0.866; RMSEA = 0.048; CFI = 0.953; NFI = 0.915). Thus, there was no significant problem of common method variance in the data.

#### 4. Results

This study used AMOS software of 17.0 versions to carry out CFA of measurement and structure model.

#### 4.1 Measurement model

As essential prerequisites for achieving valid results, the reliability, convergent validity, and discriminant validity of the measurement model were assessed. Items reliability was assessed by applying the factor loading and squared multiple correlations (SMC), and constructs reliability was assessed by applying Cronbach's  $\alpha$ . As shown in Table II, all factor loadings were well above 0.5, and all SMCs were above 0.2, indicating good reliability of the items (Bentler and Wu, 1993; Hair *et al.*, 2010). The Cronbach's  $\alpha$  were well above 0.7, indicating good reliability of the scales (Nunnally, 1978).

This study adopted the test for convergent validity and discriminant validity. Convergent validity can be assessed in terms of the average variance extracted (AVE) from the latent variables and the composite reliability. Discriminant validity refers to the correlation between constructs. Table II showed the composite reliabilities were well above 0.6 and the AVE of latent variables were above the acceptable value of 0.5. Thus, all the scale convergent validity could be confirmed (Bagozzi and Yi, 1988; Hulland, 1999). Furthermore, the square root of AVE of any construct was less than the correlation of this particular construct with other constructs (Table III), thus showing discriminant validity (Fornell and Larcker, 1981; Gaski and Nevin, 1985).

eWOM effects in Facebook fan page

IMDS 116,5	Scale/items	Factor loading	SMC	CR	AVE	Cronbach's a
110,0	Sense of virtual community			0.943	0.566	0.940
	SOVC1	0.759	0.576			
	SOVC2	0.843	0.711			
	SOVC3	0.865	0.748			
000	SOVC4	0.879	0.773			
990	SOVC5	0.870	0.757			
	SOVC6	0.806	0.650			
	SOVC7	0.769	0.591			
	SOVC8	0.819	0.671			
	SOVC9	0.587	0.345			
	SOVC10	0.590	0.348			
	SOVC11	0.566	0.320			
	SOVC12	0.680	0.462			
	SOVC13	0.636	0.404			
	Normative influence			0.893	0.513	0.891
	NI1	0.695	0.483			
	NI2	0.793	0.629			
	NI3	0.792	0.627			
	NI4	0.778	0.605			
	NI5	0.600	0.360			
	NI6	0.738	0.545			
	NI7	0.650	0.423			
	NI8	0.656	0.430			
	Informative influence	0.000	0.100	0.803	0.505	0.800
	II1	0.686	0.471	0.000	0.000	0.000
	II2	0.688	0.473			
	ПЗ	0.730	0.533			
	II4	0.736	0.542			
	Perceived eWOM review credibility	0.100	0.012	0.865	0.681	0.862
	RC1	0.808	0.653	0.000	0.001	0.002
	RC2	0.876	0.767			
	RC3	0.790	0.624			
	eWOM review adoption	0.150	0.024	0.842	0.518	0.838
	RA1	0.710	0.504	0.042	0.010	0.000
Table II.	RA2	0.671	0.304			
Measurement	RA2 RA3	0.742	0.450 0.551			
constructs and factor	RA3 RA4	0.805	0.648			
analysis	RA4 RA5	0.661	0.048			

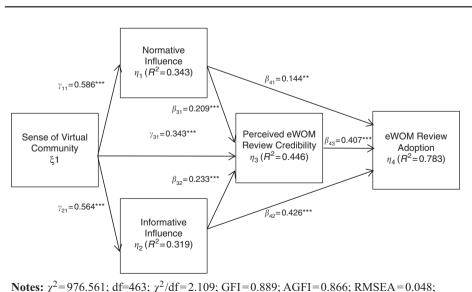
	Variable	Mean	SD	1	2	3	4	5
	<ol> <li>Sense of virtual community</li> <li>Normative influence</li> <li>Informative influence</li> <li>Perceived eWOM review credibility</li> <li>eWOM review adoption</li> </ol>		0.88 0.59	0.604*** 0.493*** 0.548***	0.520***	0.710 0.465*** 0.612***	0.0000	0.720
Table III. Correlation matrix	<b>Notes:</b> The values in the diagonal row are the square roots of the average variance extracted, and the others are the correlation between constructs. The sample size is 492. *** $p < 0.001$							

#### 4.2 Structural model

This study examined structural equation modeling and provided model fit indices suggested by Hair *et al.* (2010). The structural model showed that the  $\chi^2$ -value was 4,976.561 with 463 degrees of freedom (p = 0.00). For the goodness-of-fit statistics, the structural model had adequate fit (CFI = 0.953, NFI = 0.915, GFI = 0.889, AGFI = 0.866, RMSEA = 0.048). Table IV presents model fit indices met the required standards of references (Bentler and Wu, 1993; Browne and Cudeck, 1993; Jöreskog and Sörbom, 1993). All the model fit met the requirements of the suggested criteria.

For the examination of the proposed hypotheses of the variance in informative influence, 44.6 percent of the variance in perceived eWOM review credibility and 78.3 percent of the variance in eWOM review adoption. *H1* posited that sense of virtual community influenced (a) normative influence and (b) informative influence. From Figure 2, it indicated that the path coefficient was 0.586 (p < 0.001) and 0.564 (p < 0.001), respectively, thus supporting *H1*. *H2*, which stated that sense of virtual community affected perceived eWOM review credibility, was also confirmed ( $\gamma_{31} = 0.343$ , p < 0.001). The positive effects of (a) normative influence and (b) informative influence on perceived eWOM review credibility were also supported ( $\beta_{31} = 0.209$ , p < 0.001;  $\beta_{32} = 0.233$ , p < 0.05), thereby confirming *H3*. Furthermore, the results showed the positive influences of (a) normative influence and (b) informative influence on eWOM review adoption ( $\beta_{41} = 0.144$ , p < 0.01;  $\beta_{42} = 0.426$ , p < 0.001), thus confirming *H4*. Finally, the effect of perceived eWOM review credibility on eWOM review adoption was significant ( $\beta_{43} = 0.407$ , p < 0.001), thereby supporting *H5*.

Fit indices	$\chi^2/df$	CFI	NFI	GFI	AGFI	RMSEA	
Proposed model	2.109	0.953	0.915	0.889	0.866	0.048	<b>Tabl</b>
Level of acceptable fit	< 3	> 0.9	> 0.9	> 0.8	> 0.8	< 0.06	Model fit in



IFI=0.953; NFI=0.915; CFI=0.953; PNFI=0.802; PGFI=0.734. \*\*p<0.01; \*\*\*p<0.001

Figure 2. Structural model results

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#### 4.3 Test of mediating effects

Because of the demonstration about the effect of sense of virtual community on perceived eWOM review credibility, we took the next step further by testing the mediation effects of normative influence and informative influence between sense of virtual community and perceived eWOM review credibility, respectively. Since normative influence and informative influence had influence on eWOM review adoption, respectively, this study tested the mediation effects of perceived eWOM review credibility between two social influence constructs and eWOM review adoption.

Bootstrapping method is not a symmetrical distribution. It provides a better way to test the mediation effect (Zhao *et al.*, 2012). This study conducted bootstrapping method through the plug-in Macro function of SPSS with the program developed by Preacher and Hayes (2008). We simulated 2000 times suggested by Zhao *et al.* (2012) and got the 95 percent confidence interval of the products of regression coefficients ( $a \times b$ ). It indicates that there is mediation effect of mediator if the confidence interval does not include zero. According to Table V, the 95 percent confidence intervals of percentile and bias-corrected of bootstrapping did not contain zero. Such results indicated that both normative influence and informative influence mediated the relationships between sense of virtual community and perceived eWOM review credibility, respectively, and perceived eWOM review adoption, respectively.

Furthermore, following prior research, three steps were required to test the mediation effect (Baron and Kenny, 1986; Komiak and Benbasat, 2006). In step 1, this study treated sense of virtual community as an independent variable and perceived eWOM review credibility as the dependent variable, and found a significant relationship between them ( $\beta = 0.359$ , p < 0.001). In step 2, this study ran a model which included sense of virtual community an independent variable and normative influence as the dependent variable. The result indicated a significant effect ( $\beta = 0.632$ , p < 0.001). In step 3, both sense of virtual community and normative influence were independent variables and perceived eWOM review credibility was the dependent variable. The results indicated both the effects of these two independent variables on perceived eWOM review credibility were significant ( $\beta_1 = 0.241$ , p < 0.001;

			Indirect			1 01 01	entile hod	Bia corre	as- ecte
IV	M	DV	Effect	Mean	SE	Lower	Upper	Lower	UĮ
Sense of virtual community	Normative influence	Perceived eWOM review credibility	0.122	0.117	0.021	0.077	0.161	0.080	0.
	Informative influence		0.131	0.082	0.019	0.047	0.120	0.052	0.
Normative influence	Perceived eWOM review credibility	eWOM review adoption	0.098	0.174	0.020	0.138	0.215	0.141	0.2
Informative influence			0.110	0.162	0.020	0.124	0.204	0.128	0.

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**Table V.** Bootstrapping analysis for the mediating effects of trust  $\beta_2 = 0.186$ , p < 0.001; thus, normative influence mediated the impact of the sense of virtual community on the perceived eWOM review credibility. In addition, this study conducted Sobel test (Sobel 1982) to assess the significance of the mediation effect (Wood et al., 2008). The statistics of Sobel test was greater than 1.96 (Zhao et al., 2010); thus the result indicated that normative influence significantly mediated the relationship between sense of virtual community and perceived eWOM review credibility (Sobel = 4.823, p < 0.001).

This study also examined the mediating effects of informative influence on the relationship between sense of virtual community and perceived eWOM review credibility and perceived eWOM review credibility on the relationship between normative/informative influence and eWOM review adoption. Table VI showed that normative/informative influence partially mediated the relationships between sense of virtual community and perceived eWOM review credibility and perceived eWOM review credibility partially mediated the relationships between normative/informative influence and eWOM review adoption.

#### 5. Conclusions and discussion

#### 5.1 Conclusions and key findings

This study adopted the social inference theory as the core basis for the development of theoretical model. This study proposed research framework in order to understand the effects of eWOM for community members through the extension of the constructs of sense of community from the external perspective. The results of this study confirmed that social interaction constructs (sense of community, normative influence and informative influence) had effects on perceived eWOM review credibility and eWOM review adoption of community members. Meanwhile, it indicated that three mediating factors (normative influence, informative influence and perceived eWOM review credibility) had partial mediating effect through the mediating effects test.

This study confirmed that sense of virtual community was the important antecedent of social influencing factors (normative influence and informative influence). Community members would follow community norms and refer to the purchasing products when they could feel more cohesive in the community and presumed themselves as part of the brand fan page. The result is consistent with previous studies

IV	М	DV	IV→DV	IV→M	IV+M IV	$I \rightarrow DV M$	Sobel to Statistic ( $Z$ )		
Sense of virtual community	Normative influence	Perceived eWOM review credibility	0.359***	0.632***	0.241***	0.186***	4.823	0.000	
	Informative influence		0.359***	0.478***	0.276***	0.173***	4.398	0.000	
Normative influence	Perceived eWOM review credibility	eWOM review adoption	0.336***	0.325***	0.160***	0.539***	9.231	0.000	<b>Table VI.</b> Mediating effects of
Informative influence <b>Notes:</b> IV, i	ndependent v	ariable; M, m		0.314*** able; DV,			9.348 *** <i>p</i> < 0.001	0.000	social influence and perceived eWOM review credibility

eWOM effects in Facebook fan page (e.g. Lee and Park, 2008; Park and Feinberg, 2010). Fans can participate in reading others posts and interact with others in the fans activities. There are some kinds of various social activities. Thus, members join the fans just like people in group life from the view of community life. Individual behavior of fans members would be normalized by shared values of social norms. They would feel the common values shared by members in the process of interaction and seek fans with similar characteristics by complying with common understanding to establish their particular style.

The results indicated that sense of virtual community had significant and positive effect on perceived eWOM review credibility. This result is consistent with previous studies (Martin and Lueg, 2013; Ypa *et al.*, 2013). Besides, normative influence and information influence had significant and positive effects on perceived eWOM review credibility and eWOM review adoption. These results are consistent with previous study (Chu and Kim, 2011). It indicates that higher cognitive similarity of community members is more able to accept each other's ideas and beliefs when fans members form community features and individual is more able to meet community norms (normative and informative influence). Individual can perceive the eWOM review credibility for their fan page.

This study confirmed that community members perceived higher eWOM credibility and increased eWOM review adoption. The results are consistent with previous studies (Cheung *et al.*, 2009, Fan and Miao, 2012, Fan *et al.*, 2013; Lee and Koo, 2012). The results of this study indicated that the crucial factors could predict the eWOM effects in social websites involving brand fan page users' sense of virtual community on social websites and the social influence among social community members. Furthermore, by enhancing brand fan page users' cognition of the perceived eWOM review credibility on brand fan pages, the users' eWOM review adoption could be effectively increased. Since the sources and recipients of fan page information are the same from the product loving consumers with same amount information collection, high credibility, fair, persuasive, WOM related to narrative personal story or personal experience, it is easy to pass on the feelings of the product to adopt this information for WOM receivers to facilitate purchase decision.

#### 5.2 Research and practical implications

In previous studies related to internet behavior, scholars have focussed on online platforms such as e-mail, communication tools, forums, and blogs. The users of these platforms were either friends or strangers (Henning-Thurau *et al.*, 2004). Social websites, which have been popular in recent years, incorporate networks of website members with whom individuals have both strong and weak ties. In other words, members who interact online may be friends, relatives, or strangers in real life. Based on the concept of fan page communities on social websites, this study established a research model in which sense of virtual community, social influence and eWOM effects were interrelated. The findings of this study can be provided for brand sellers who aim to establish platforms on Facebook or other social websites to facilitate the interaction between them and consumers, or among consumers.

Previous research on the sense of virtual community typically targeted the group level, which involved the influence of individuals on virtual communities, but rarely investigated the influence exerted by virtual community members on their interpersonal relationships (Tonteri *et al.*, 2011). Because the major characteristics of social websites, including brand fan pages, involve the interaction among people, this study explored the relationship between the sense of virtual community and

social influence. Moreover, when investigating the sense of virtual community, numerous studies have constructed scales possessing reliability, but only a few studies have explored the subsequent influence that the sense of virtual community exerted on virtual community users' cognition or behavior after the users developed the sense (Wang and Tai 2011).

For practical recommendations, the advances in internet technology and the prosperity of social websites have gradually changed people's communication methods and lifestyles. Contemporarily, people use social websites as the platforms for interaction and communication. For companies, business can be conducted in places where people gather. Thus, firms intend to establish platforms on social websites where they can engage in satisfactory interaction and communication with consumers to increase the sale of products or the brand value. A company's establishment of interactive platforms generates profits and value when a company understands how to foster community members' consciousness, increase the interaction among members, and magnify the eWOM effects in brand fan communities.

Extending to the management of social networking sites of fans, although social website users' sense of virtual community and social influence could enhance the eWOM effects, the empirical research findings indicated that not every user developed a sense of virtual community in social websites or was willing to interact with other people in virtual communities.

For the enhancement of sense of the virtual community of community members, community managers can strengthen the interactive activities of their members, or play a catalyst between members. For example, community managers can organize a series of activities for selection of article topic, meet between members, and vote for product evaluation activities. These activities promote the community atmosphere to increase members' relationships and contribute to the sense of belonging, caring for other members, integrating into the community, trusting each other and sharing information. It can meet individual needs through the online exchange of information and cooperation between members and fans. Community members can enhance the sense of product information by creating interaction between community members and manager. Manager can offer a free trial, share and write the free trial results through posting messages by community manager or members. Community members can fully express their views or feedback and members can get support and encouragement in the community. These are means of enhancing and establishing the sense of virtual community members.

Thus, brand fan page administrators should not only encourage page members to participate in or to create social interaction, but also provide relevant official information to increase the credibility of information. When brand fan page users are influenced by communities or perceive that the eWOM information on fan pages possess optimal credibility, they may adopt the information. Additionally, when the eWOM information on a page relate to the superiority of a brand's products and services, the information prompts consumers to purchase the products, which generates profits for companies.

Consumers tend to search for the relevant product information through the brand fan page before they make purchase decisions. Therefore, company builds up the brand fan page as an information exchange platform. Brand fan page members will deepen the sense of psychological commitment for sharing information when they receive assistance through interaction with other members. Members will follow the community norms in the process of information adoption. It enhances the confidence

eWOM effects in Facebook fan page IMDS 116,5 of members to brand fan page through the interactive process with each other and exchange messages. Community members will be able to accelerate decision-making behavior of the desired product when individuals perceived sense of credibility for eWOM comments.

#### 5.3 Limitations and future research directions

The sampling target cannot be representative for all users of other brand community websites, because this study only investigated Facebook brand fan page. This study suggests that future researchers may investigate different types of brands virtual community websites to analyze the similarities and differences among different brands community website users. Future researchers can apply this proposed model to study the users of other forums or discussion areas. In addition, future studies can include a wider range of constructs such as homophile and negative eWOM. The perception of information recipients includes the influence of homogeneity on attitudes among the message recipient members during the communication (Rogers and Bhowmik, 1970). Because the comments of negative eWOM (Chang et al., 2013) have greater persuasive power than positive eWOM, managers must pay attention to the negative eWOM and continue to observe consumers' demands. They should response appropriate and effective to dissatisfied message rapidly and improve their products or services. Finally, this study adopted the social influence theory as a basis for the development of the theoretical framework. This study did not consider other important constructs such as consciousness, prior knowledge and participation motivations. Future research can consider these constructs in the proposed model.

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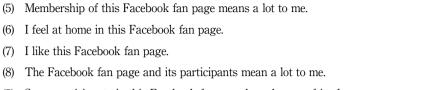
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#### Appendix. Scale items

Sense of virtual community (seven-point Likert scale)

- When someone praises the expertise of this Facebook fan page it feels like a personal (1)compliment.
- (2) I see myself as a part of a community of professionals that has been built up in the Facebook fan page.
- (3) It feels good to be a member of this Facebook fan page.
- (4) I see myself as a member of this Facebook fan page.



- (9) Some participants in this Facebook fan page have become friends.
- (10) I recognize the screen names of most participants.
- (11) I can influence the matters dealt with in the Facebook fan page if I want to.
- (12) I care about what other participants think about my actions in this Facebook fan page.
- (13) The participants of this Facebook fan page can influence each other. Source: Tonteri *et al.* (2011)

#### Normative influence (seven-point Likert scale)

- (1) I rarely purchase the latest fashion styles until I am sure my friends approve of them.
- (2) It is important that others like the products and brands I buy.
- (3) When buying products. I generally purchase those brands that I think others will approve of.
- (4) If other people can see me using a product, I often purchase the brand they expect me to buy.
- (5) I like to know what brands and products make good impressions on others.
- (6) I achieve a sense of belonging by purchasing the same products and brands that others purchase.
- (7) If I want to be like someone. I often try to buy the same brands that they buy.
- (8) I often identify with other people by purchasing the same products and brands they purchase.

Source: Bearden et al. (1989)

#### Informative influence (seven-point Likert scale)

- (1) To make sure I buy the right product or brand. I often observe what others are buying and using.
- (2) If I have little experience with a product. I often ask my friends about the product.
- (3) I often consult other people to help choose the best alternative available from a product class.
- (4) I frequently gather information from friends or family about a product before I buy. Source: Bearden *et al.* (1989)

#### Perceived eWOM review credibility (five-point Likert scale)

- (1) I think review is factual.
- (2) I think review is accurate.
- (3) I think review is credible. Source: Cheung *et al.* (2009)

eWOM effects in Facebook fan page

IMDS 116,5	<ul><li>eWOM review adoption (five-point Likert scale)</li><li>(1) To what extent do you agree with review?</li></ul>
110,0	(2) Information from review contributed to my knowledge of discussed product/service.
	(3) Review made it easier for me to make purchase decision. (e.g. purchase or not purchase).
	(4) Review has enhanced my effectiveness in making purchase decision.
1004	(5) Review motivated me to make purchase action.
	Source: Cheung et al. (2009)

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