Examining the influence of customer-to-customer electronic word-of-mouth on purchase intention in social networking sites

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ABSTRACT

Social networking sites (SNSs) have assumed an increasingly central role in the passage of electronic word-of-mouth (eWOM) among cosmetics users. However, the mechanism by which Customer to Customer (C2C) eWOM in SNSs influences consumer purchase intention has yet to be fully understood. This study develops a comprehensive research framework that focuses on the influence of C2C eWOM using information persuasion in reference to purchase decision making. This study collected data from a sample of 314 Taiwanese respondents, using paper-based questionnaires. The programs SPSS and Smart PLS were used to analyze the collected data. The results show that perceived persuasiveness, perceived informativeness, and source expertise are adequate predictors of the usefulness of eWOM. Additionally, perceived persuasiveness, source expertise, and source trustworthiness significantly predict the believability of eWOM with regard to SNSs. It was found that perceived usefulness and credibility together increase the likelihood of the adoption of an eWOM message, and eWOM adoption has a strong mediating role in the influence of eWOM credibility and usefulness on consumer purchase intention toward products recommended on SNSs. Since few previous studies have explored the mediating role of eWOM adoption on the influence of antecedents on consumer purchase intention, this study confirms the key mediating role exerted by eWOM adoption on the relationship between the usefulness and credibility of eWOM and purchase intention. This empirical study can enable managers to better understand the effects of C2C eWOM from SNSs on consumer purchase behavior. Our results should also encourage marketers to work with SNSs to develop viral marketing campaigns, encouraging customers to spread useful and credible C2C eWOM to improve purchase intentions.

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1. Introduction

Social media is a global phenomenon. As of December 2016, Facebook was the largest social network in the world, with a total of 1.86 billion monthly active users. Other social networking sites (SNSs) also serve large populations: Wechat has 846 million monthly active users, Twitter has 319 million, Instagram has 600 million, and Line[1] has 217 million. The growth of SNSs has caused a paradigm shift in electronic word-of-mouth (eWOM) toward social word-of-mouth (sWOM), which enables consumers to exchange product-related opinions and experiences with their acquaintances, other consumers with the same interests, and even brand-managers, almost without limitation (Hajli, 2018). Indeed, with social media, a growing number of brands are seizing new opportunities to leverage consumer exposure and generate greater sales.

Consumers can obtain eWOM on both B2C- and C2C-sponsored SNS pages. Many companies are investing heavily in SNS use and are working to increase the amount of eWOM activities on their fan pages (B2C), such as by attracting user comments to their brand posts, setting up corners for eWOM exchange for consumers to join,

or forwarding the brand-related posts of recommenders. In spite of the best efforts of companies, it has been found that postings on C2C-sponsored SNS platforms are of higher credibility and are thus more influential than those on B2C ones, as is also seen with firm-sponsored and third-party websites (Weisfeld-Spolter, Sussan, & Gould, 2014). C2C interactions via social media have also been shown to substantially shape consumer purchase intentions (Wang, Yu, & Wei, 2012). However, the mechanism by which eWOM transfers from customer to customer over SNSs, influencing consumption behavior, remains unclear. This study thus examines eWOM in C2C-sponsored SNSs (C2C eWOM), as derived from a set of activities, including reading posts and conducting peer communication with recommenders, with many studies only focusing on one of these issues (Chen, Tang, Wu, & Jheng, 2014; Wang et al., 2012). Although C2C eWOM within social media remains outside the control of the firm, a more nuanced view of such customer-driven content will provide firms with valuable data to better analyze customer demand (Larson & Watson, 2011).

Direct eWOM from customer to customer can change customer preferences and actual purchase behavior; thus, further investigation of related market outcomes is needed (Libai et al., 2010). Moreover, as networks of "friends" on SNSs may include both strong and weak ties, the effects of C2C eWOM in SNSs might differ from those seen on other eWOM platforms (Chu & Kim, 2011). In practice, studies on the links between eWOM on SNSs and purchase intentions remain in their infancy, and the number of existing research papers is extremely limited, relative to the potential effects that eWOM may have in C2C interactions on such platforms (See-To & Ho, 2014; Zhu, Chang, & Luo, 2016). Furthermore, in individual-level studies, the lack of agreement among existing papers with regard to the effects of eWOM significantly limits the reporting of conclusive findings (Cheung & Thadani, 2012). More robust research models are thus needed to consolidate our understanding of the influence of eWOM in SNSs on consumer purchase behaviors.

Two concerns were addressed as the model used in this work was established. The first regards the capability of the original Information Adoption Model (IAM), as proposed by Sussman and Siegal (2003), to explain the adoption of eWOM information by the customer. Drawing upon the basic IAM to test the impacts of eWOM in the forum "Openrice," Cheung, Lee, and Rabjohn (2008) concluded that the four constructs of their study accounted for as little as 46 percent of the variance, thus questioning the use of information usefulness as a sole mediator to motivate the adoption of eWOM information and further customer responses (Ozuem & Boem, 2016, p. 54). Oum and Han (2011) also suggested incorporating additional components to validate the adoption of customer-generated contents. A growing body of research has examined the issue of credibility in the context of social media. Perceived eWOM credibility is the primary precursor that leads to the acceptance of eWOM (Fan & Miao, 2012; Fang, 2014; Luo, Luo, Schatzberg, & Sia, 2013). The way consumers choose recommenders by searching on SNSs can enhance the usefulness of eWOM, while SNSs' characteristic of interactivity can also increase the credibility of information obtained through eWOM (Hajli, 2018). To address gaps in the current literature, we considered both aspects, reinforcing the explanatory power of the framework by extending the IAM, in which perceived credibility and perceived usefulness jointly mediate relationships between eWOM antecedents (argument quality and source credibility) and consumer responses.

Second, the decision whether to adopt information is a fundamental consequence that results from digesting the information provided in eWOM exchanges, and thus its use in making informed purchase decisions (Erkan & Evans, 2016; Fan & Miao, 2012). Hence, using the IAM, this study explains the mechanism by which an eWOM message could affect consumer perceptions of its usefulness and subsequent adoption of the message due to its argument quality and source credibility. According to a survey conducted by Deloitte's Consumer Products Group, 62 percent of consumers read online consumer-created reviews, and of these, as many as 82 percent use eWOM to form their purchase decisions (cited in Fang, 2014). While the adoption of information has frequently been assumed to be part of the process of persuasion in many eWOM studies (Cheung et al., 2008; Fang, 2014; Lis, 2013), the causal linkages between customer adoption of eWOM in SNSs and purchase intention remain unclear, due to limited empirical findings. As such, an elaboration of the relationship between the adoption of eWOM and purchase intention is needed to better comprehend the connections between consumer persuasion and decision making for purchases.

To highlight the direct impact of the process of persuasion by consumer information on behavioral intention, only positive eWOM postings were considered in this study. This is because negative messages are likely to result in high levels of information adoption while adversely affecting consumer behavioral intention. Based on the above discussion, this study contributes to the literature by presenting an examination of the mechanism by which eWOM content (informativeness and persuasiveness) and its source informants (trustworthiness and expertise) influence consumer perceptions of the usefulness, credibility, and adoption of eWOM and purchase intention. The remainder of this paper is structured as followed. First, we review the IAM with a particular focus on its use with eWOM. Then we present a review of the literature and our hypotheses, followed by an introduction of the methodology used in this study and its findings. The managerial and academic implications, as well as limitations and directions for future research, are given at the end of the paper.

2. Literature review

2.1. IAM

The IAM, developed by Sussman and Siegal (2003), has been employed in many studies in the field of information systems and marketing to explain how persuasive information is processed (Cheung et al., 2008; Watts & Wyner, 2011; Zhang, Zhao, Cheung, & Lee, 2014; Zhu et al., 2016). The fundamental premise of IAM is based on the Elaboration Likelihood Model (Petty & Cacioppo, 1986) and the Technology Acceptance Model (TAM; Davis, 1989). The IAM has four constituents: argument quality, source credibility, information usefulness, and information adoption. Thus, according to this model, consumers screen and critique a certain piece of information centrally and peripherally to determine whether to follow the related recommendation, evaluating its usefulness (Petty & Cacioppo, 1986). In the central route, consumers closely scrutinize the content quality of the task-related advice presented on social media. When forming an opinion, consumers favor strong and convincing arguments to weak and unreal ones (Petty & Cacioppo, 1986). In the peripheral route, consumers rely on non-content shortcuts, best represented by source credibility. As mentioned above, SNSs facilitate consumer perceptions of issuer credibility, which is a crucial factor in the persuasion process.

Cheung et al. (2008) found that the original IAM had rather weak explanatory power in the context of online forums, and they suggested integrating an additional mediator together with information usefulness to explain adoption behavior. In addition, the two routes of the persuasion process are also universally applicable for measuring perceived credibility toward brand-related messages (Fan, Miao, Fang, & Lin, 2013; Fang, 2014). Credibility reduces perceived risk and uncertainty in both social and business

interactions and thus is vital in consumer decision making (Awad & Ragowsky, 2008). As trust and credibility towards eWOM on SNSs have drawn increasing attention from scholars (Fang, 2014; Moran, Muzellec, & Nolan, 2014), we simultaneously examine perceived credibility and information usefulness to increase the understanding of eWOM adoption. Drawing upon the IAM, this study posits that those who retrieve information from SNSs will incorporate brand or product information into their memory to take action subsequently, following the advice or recommendations of SNSs.

2.2. Antecedents of perceived usefulness

According to the IAM, consumption decisions are determined by the perceived quality of information that consumers receive. Higher-quality information contributes to greater perceived usefulness (Lin & Lu, 2000). In the social media domain, customers obtain product-related posts from various sources with little effort and examine these using various criteria to assess the value of the focal product. Such product evaluations are significant only when the information they contain meets the recipients' needs and requirements (Olshavsky, 1985). Lee and Kozar (2006) found that the provision of relevant information is the key attribute for success in the online travel business. In addition, websites must be consistently updated to meet user expectations of product value (Madu & Madu, 2002). Furthermore, complete messages that contain information of sufficient depth and breadth will attract more users and maximize firms' chances of acquiring and retaining customers (Sullivan, 2000). The relevance, timeliness, and comprehensiveness of the information in a message influence consumer perceptions of informativeness (Zhang et al., 2014). Greater informativeness in e-commerce enables users to compare products, increases their shopping enjoyment, and allows them to make better purchase decisions and thus is directly associated with consumer perceptions of usefulness (Ahn, Ryu, & Han, 2004). Furthermore, previous eWOM studies have noted that relevance, timeliness, and comprehensiveness are the primary features of eWOM messages that positively affect consumer perceptions of usefulness (Cheung, 2014; Cheung et al., 2008).

Persuasive arguments have been found to significantly influence consumer responses (Angst & Agarwal, 2009; Bhattacherjee & Sanford, 2006). Sen and Lerman (2007) explored the indirect effects of persuasive messages on the perceived usefulness of messages and related attitudes while examining the mediating role of consumers' causal attributions. Furthermore, Gunawan and Huarng (2015) found that the persuasive strength of messages on SNSs is crucial for forming consumer attitudes toward the information and its usefulness. It is logical that when a person is convinced by a message, it will be perceived as more valuable and practical. Therefore, the following two hypotheses are developed:

H1. The perceived informativeness of eWOM messages in SNSs has positive effects on perceived usefulness.

H2. The perceived persuasiveness of eWOM messages in SNSs has a positive effect on perceived usefulness.

Wathen and Burkell (2002) found that source credibility is a key factor that helps consumers to judge online information. People generally turn to expert recommenders rather than laypersons when seeking valid assertions to enhance their product-related knowledge (Hovland, Janis, & Kelley, 1953). Martin and Lueg (2013) claimed that the competence of the source of information is significantly related to the eWOM usage of recipients. Moreover, the expertise of the eWOM sender has been shown to greatly influence whether consumers perceive a review to be useful on

websites with social-networking functions (Cheng & Ho, 2015). However, in online settings, it remains difficult to determine the expertise and trustworthiness of the sender of the information, due to the lack of past interactions and the unfamiliarity with their identity (Xu, 2014). Indeed, previous studies have revealed a weak or nonsignificant relationship between source trustworthiness and consumer response, such as in relation to the intention to utilize user-generated content for travel planning (Ayeh, Au, & Law, 2013) or in consumer perceptions of the usefulness of the suggestions made on an online forum (Cheung et al., 2008). However, social media allows eWOM retrieval from existing contacts (Chu & Kim, 2011), and the availability of communicator-related cues on social media, such as profile information, can also help people assess the validly of information and thus whether to use it in their decision making (Park, Xiang, Josiam, & Kim, 2014). Overall, following Cheung et al. (2008) but shifting the focus to the domain of social media, this study posits that if the consumer is aware that a message is posted by a competent individual with a high degree of believability, then he or she will develop a favorable perception of the information's usefulness, no matter whether the relationship they have with the poster is real or virtual. Thus, this study proposes the following two hypotheses:

H3. Source expertise has a positive effect on eWOM usefulness.

H4. Source trustworthiness has a positive effect on eWOM usefulness.

2.3. Antecedents of perceived credibility

The literature confirms the direct influence of persuasive argument on generating favorable consumer perceptions and decision outcomes, especially in online environments (Angst & Agarwal, 2009). If the online recommendation is perceived to include a highly persuasive argument, the receiver will be more likely to have a positive attitude toward it (Zhang et al., 2014). In the domain of eWOM communication, based on dual process theory, a number of studies have recognized the importance of strength of argument with regard to the prediction of perceived credibility (Cheung, Luo, Sia, & Chen, 2009; Fang, 2014). Fang (2014) found that strength of argument is the most important factor impacting credibility among consumers. Therefore, the following hypothesis is proposed:

H5. The perceived persuasiveness of eWOM messages in SNSs has a positive effect on eWOM credibility.

The positive effects of source credibility on overall message credibility have been proven in many previous studies (Slater & Rouner, 1996; Wathen & Burkell, 2002). It is widely accepted that message senders with high levels of expertise are better able to convince other consumers, as people will be more likely to trust the information they provide because their messages appear to be more credible (Lis, 2013; Teng, Khong, Goh, & Chong, 2014). Moreover, Baber et al. (2016) concluded that when consumers feel overwhelmed, they tend to trust only the most experienced and knowledgeable sources.

In any communication, changes in the receivers' attitude can often be directly attributed to the sincerity of communicator (Hovland & Weiss, 1951). Because online reviews are shared by unknown individuals, scholars have investigated the role of source credibility in the context of eWOM communication (Park & Lee, 2009; Park, Lee, & Han, 2007). However, Teng et al. (2014) claimed that thanks to the presence of salient cues in the domain of social media, the level of source credibility can eventually be linked to the level of confidence and acceptance of online reviews by the message recipients. Lis (2013) indicated that trustworthy

reviewers show high levels of objectivity and sincerity, leading receivers not to suspect the validity of the information that is given. Therefore, the following two hypotheses are proposed:

H6. Source expertise has a positive effect on perceived eWOM credibility.

H7. Source trustworthiness has a positive effect on perceived eWOM credibility.

2.4. Antecedents of eWOM adoption

According to the IAM and Sussman and Siegal (2003), the perceived usefulness of information forecasts adoption intention. Cheung et al. (2008) confirmed that information usefulness is strongly associated with the consumer decision to adopt information from anonline forum. Consumers assign certain levels of usefulness to reviews by means of a screening process in which irrelevant information is excluded and only useful information is taken into consideration (Purnawirawan, De Pelsmacker, & Dens, 2012). Thanks to social media, consumers are now able to access vast amounts of C2C eWOM information, discovering more useful advice, thus increasing their intention to adopt it for their purchase decisions (Erkan & Evans, 2016). Thus, we propose the following hypothesis:

H8. Higher levels of perceived usefulness create higher levels of eWOM adoption.

The assessment of information credibility is made early in the process of persuasion via information (Wathen & Burkell, 2002). In the context of eWOM, credibility is expressed in how receivers accept and learn from the derived information. Therefore, if recipients establish that an incoming piece of information is credible, their confidence in accepting what the informant advocates increases (Sussman & Siegal, 2003). In an experiment conducted by Petty, Priester, and Brinol (2002), where sources were depicted as credible, the recipients of information did not cast doubt on the related information and accepted it, for the most part. By contrast, if a review is deemed not credible, readers will likely ignore its recommendations, due to the risks of deception (Filieri, Alguezauzi, & Mcleay, 2015). The literature on eWOM has thus concluded that information credibility is a key element fostering the adoption of related messages (Fan et al., 2013; Fang, 2014; Hajli, 2018; Lis, 2013).

H9. Higher levels of perceived credibility create higher levels of eWOM adoption.

2.5. The mediating effect of eWOM adoption

Based on the high importance of eWOM adoption in determining consumer intention, this study proposes that eWOM adoption plays a mediating role in the effects of eWOM usefulness and credibility on purchase intention. eWOM adoption benefits e-vendors by turning the recommendations on SNSs into purchases (Erkan & Evans, 2016). Moreover, eWOM usefulness enables consumers to learn and modify their attitudes and their purchase decisions (Park & Lee, 2009; Wang et al., 2012). Gunawan and Huarng (2015) also confirmed that strong purchase intentions toward virally marketed products on SNSs can result from viral messages with high levels of perceived usefulness. eWOM adoption also benefits from higher levels of eWOM credibility by learning from it; this impacts their consumption decisions. In an e-commerce context, previous research has revealed that trust is a fundamental factor for online shopping. If a person trusts an e-vendor, the likelihood of his or her purchasing products on that website increases (Lu, Zhao, & Wang, 2010). Dabholkar and Sheng (2012) confirmed that greater trust in the recommendation agent increased consumer purchase intentions. See-To and Ho (2014) also posited that the eWOM shown on fan page on a SNS has a significant impact on online purchase intention. Credibility is a subclass of trust (Simons, 2002), so this study suggests that perceived credibility may aid the consumption decisions made by users who view eWOM on SNSs. Overall, purchase intention is enhanced by the influence of eWOM usefulness and credibility, as mediated through the beneficial influence of eWOM adoption.

H10. eWOM adoption mediates the influence of eWOM usefulness and eWOM credibility on purchase intention.

The research framework is developed as shown in Fig. 2.

3. Methodology

3.1. Operationalization of the research constructs

Following Petty and Cacioppo (1986), argument quality is operationalized as highlighting the persuasive strength of arguments embedded in informational messages (Bhattacherjee & Sanford, 2006; Cheung et al., 2009), whereas many other researchers have held that argument quality is based on the qualities of the received information (such as "complete," "accurate," or "timely") (Cheung et al., 2008; Filieri & McLeay, 2014; Sussman & Siegal, 2003). To clarify these contradictory understandings of argument quality, this study proposes two attributes, based on Zhang et al. (2014): "informativeness" denotes the quality of received information in terms of comprehensiveness, timeliness, and relevance, whereas "persuasiveness" focuses on the persuasive strength of the received information.

Next, "source expertise" and "source trustworthiness" are the two most common dimensions of source credibility (Cheung et al., 2008). In this study, we adopt "source expertise" to capture the professional knowledge and experience that the message provider has on the focal products; we also use "trustworthiness" to represent the degree of confidence in and acceptance of the source that the message receiver has. In the TAM, perceived usefulness is related to the individual's perception that the use of a new technology enhances his/her performance. To reflect informational
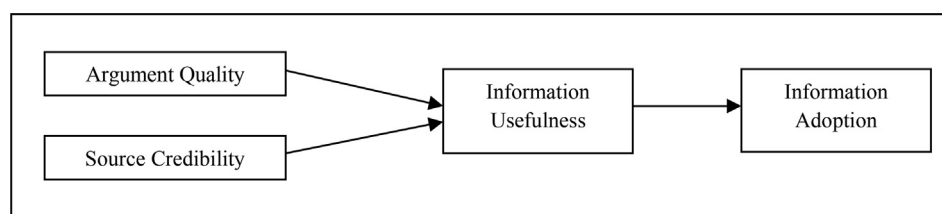

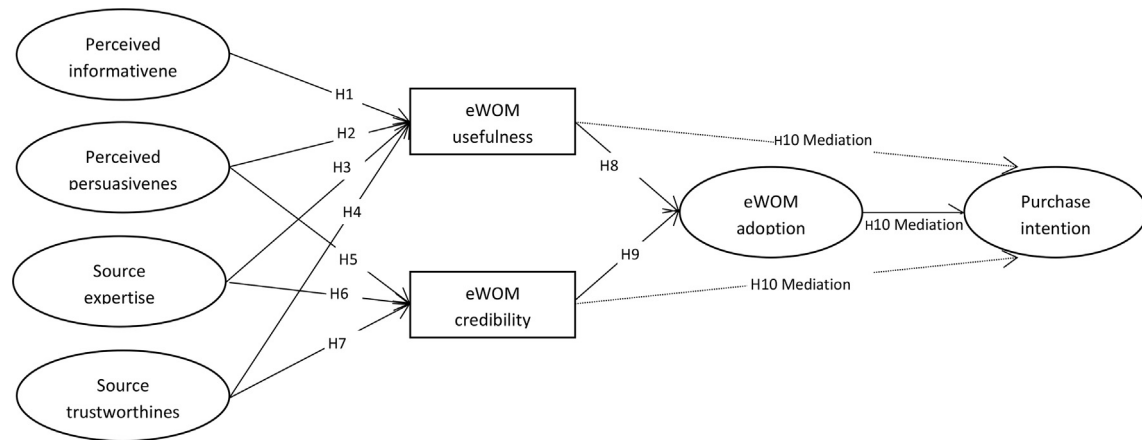**Fig. 1.** Information adoption model.

Fig. 2. Conceptual framework of this study.

Table 1
Sample characteristics.

Description		Percentage	Description		Percentage
Gender	Male	18.48	SNS account	Facebook	100.00
	Female	81.52		Line	70.06
Age	18–25 years old	15.29		Instagram	18.79
	26–35 years old	83.12		Others	9.55
	Older than 35 years old	1.59	Time spent on SNS	Less than 2 h	22.93
Education	Bachelor's degree	74.52		2–5 h	63.69
	Master's degree or higher	25.48		More than 5 h	13.38
Annual income	Less than 0.5 million NTD	90.10	Frequency of reading eWOM last month	1 - 3 times	31.85
	0.5 to 1 million NTD	9.90		4 - 6 times	57.32
	Above 1 million NTD	0.00		More than 6 times	10.83

influence in the social media context, this study adopts the definition of Sussman and Siegal (2003), who concluded that perceived usefulness pertains to the individual's perception that eWOM information is helpful in his or her consumption-related decisions. Moreover, assessments of credibility are also part of any piece of information and thus of the decision whether to follow the related recommendation (Lis, 2013). Although consumers seem to attribute the credibility of information to its source (Brown, Broderick, & Lee, 2007), based on Cheung et al. (2009), eWOM credibility is defined as the extent to which one perceives the whole of certain piece of eWOM information as believable, true, or factual. Following this, in the current study, eWOM adoption refers to the extent to which eWOM receivers accept and consider suggestions from SNSs in their later buying decisions (Cheung et al., 2008; Fan et al., 2013; Fang, 2014; Filieri & McLeay, 2014). Finally, purchase intention refers to the likelihood that a person will purchase the product (Bian & Forsythe, 2012) that is recommended on an SNS.

3.2. Data collection

Skincare products are chosen as the focal items in our study. Increasing living standards and changes in consumption patterns over last few decades have transformed Taiwan into a lucrative market (valued at approximately US$1 billion in 2009) for beauty care products, with each Taiwanese woman spending an average of US$978 on cosmetics yearly (Doron, 2013). According to Mintel. com (2015)), the beauty market's heaviest consumers are also the most likely to engage on social media, with more than 70 percent saying that social media posts motivate them to buy particular products. Furthermore, in a report released by Wearesocial in 2016, Taiwan has heavy social media usage, with 72 percent of the population being SNS users. It is thus appropriate to study social media

eWOM regarding skincare products in Taiwan.

In the initial phase of data collection, 100 students at Chinese Culture University were invited to complete a paper-based questionnaire. Among them, 20 respondents were determined to be ineligible as they were not SNS users (5 percent), were not purchasers of skincare products (45 percent), or made purchase decisions without searching for recommendation (55 percent). The remaining respondents were asked to log into their most often used SNS, search for recommendations of skincare products, and select one positive recommendation post from other consumer. From this specific post, the respondents were encouraged to visit the recommender's profile page and interact with him or her to solve the assessment puzzle in the questionnaire. After excluding 3 surveys for missing data, a total of 77 surveys were used for analysis. The respondents' demographic characteristics were as follows: 72.5 percent females, 27.5 percent males; 62.5 percent younger than 26 years old, 37.5 percent 26 years old and older; 87.5 percent earning less than 0.5 million NTD per year, (the annual median salary of Taiwan),[2] and 12.5 percent earning more than 0.5 million NTD per year. The results of a pre-test empirical analysis show that the reliability and validity of the measurement items met the appropriate criteria (Hair, Black, Babin, & Anderson, 2010).

Then the main study was carried out to test the hypotheses. A total of 430 students were invited from two universities in Taipei, and 350 passed the screening test to take part in the primary survey. Only 36 surveys were excluded due to doubtful answers and missing data, leaving a total of 314 valid questionnaires for our analysis. The demographic characteristics of the sample are presented in Table 1. It should be noted that, just behind Facebook, Line

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[2] The median monthly wage in Taiwan is NTD$40612 (2016).

users accounted for more than two-thirds of respondents, reflecting the popularity of this app in Taiwan.

3.3. Measurement items

This study operationalized eight major constructs. All items were scored on seven-point Likert scales, ranging from strongly disagree (1) to strongly agree (7), with the exception of two control variables that had a single-item measure. We measured information quality using three items for the dimensions "persuasiveness" and "informativeness," as proposed by Zhang et al. (2014). Source expertise was measured using four items adapted from a scale for measuring the product-related expertise of the profile owner produced by Fang (2014). Additionally, source trustworthiness was measured with five items, using a scale adapted by Lis (2013) and Ohanian (1991). We also used the adaptations of Fang (2014) to measure perceived eWOM credibility and eWOM adoption. For perceived eWOM usefulness, we adapted the original measurement scale of the IAM (Sussman & Siegal, 2003), assessing this using three items. Purchase intention was measured with three items adapted from Prendergast, Ko, and Yuen (2010). The initial questionnaire was drafted in English, translated into Chinese, and back translated into English by two independent bilingual individuals to ensure the equivalency of meaning. Respondents were asked to view sample piece of eWOM and use this as the basis of their opinions for all of the questionnaire items.

4. Results and discussions

In this study we implemented structural equation modeling (SEM) using the smart partial least squares (PLS) approach to examine interrelationships among multiple dependent and independent variables simultaneously (Hair, Black, Babin, Anderson, & Tatham, 2006). According to Hair, Ringle, and Sarstedt (2013), the methodological advances in Smart PLS can help researchers model

relationships in a more flexible way, providing a more nuanced understanding of theoretical concepts. PLS also enabled us to carry out the two—step approach to SEM analysis, as recommended by Anderson and Gerbing (1988). In the first step, the measurement model was specified using the interrelationships between the indicator (observed) and latent (unobserved) factors. In the second step, the structural model related to dependent and independent variables was specified to test the hypotheses.

4.1. Evaluation of the measurement model

This study assessed scale reliability through internal consistency reliability. The Cronbach's alpha for the constructs ranged from 0.821 to 0.936, much higher than the threshold level of 0.7 recommended by Nunnally (1978), thus verifying their internal consistency. In addition, the composite reliability of the remaining constructs had a value that significantly exceeded the suggested minimum level of 0.7 (Chin & Gopal, 1995), indicating that the variance shared by the indicators was robust. Overall, the results show that all eight constructs had high reliability and internal consistency.

With regard to the validity of scales, convergent and discriminant validity were examined. The average variance extracted (AVE) values of the constructs, as listed in Table 2, were between 0.779 and 0.856, and the factor loading was higher than 0.6 for each variable, showing a satisfactory convergent validity of the constructs (Fornell & Larcker, 1981). In addition, the root mean square AVE of all the constructs exceeded the corresponding inter-correlations among the latent constructs in the model (Table 3), and thus the constructs had sufficient discriminant validity (Fornell & Larcker, 1981). Furthermore, Harman's one-factor tests (Harman, 1967) were performed to assess the threat of common method variance (CMV). The fundamental assumption of this technique is that if substantial CMV is present, either (a) a single factor will emerge from the factor analysis or (b) one general factor will

Table 2
Measurement scale results.

Construct	Sources	Item	Loading	Cronbach's α	CR	AVE
Perceived informativeness	Zhang et al. (2014)	pi1	0.852	0.905	0.945	0.801
		pi2	0.845			
		pi3	0.851			
Perceived persuasiveness	Zhang et al. (2014)	pp1	0.928	0.936	0.974	0.856
		pp2	0.921			
		pp3	0.927			
Source expertise	Fang (2014)	se1	0.826	0.901	0.932	0.795
		se2	0.814			
		se3	0.810			
		se4	0.827			
Source trustworthiness	Lis (2013); Ohanian (1991)	st1	0.761	0.904	0.934	0.806
		st2	0.791			
		st3	0.898			
		st4	0.819			
		st5	0.817			
eWOM usefulness	Sussman and Siegal (2003)	us1	0.835	0.881	0.916	0.779
		us2	0.836			
		us3	0.842			
eWOM credibility	Fang (2014); Cheung et al. (2009)	cr1	0.841	0.899	0.931	0.791
		cr2	0.840			
		cr3	0.851			
eWOM adoption	Fang (2014)	ad1	0.922	0.821	0.959	0.803
		ad2	0.848			
		ad3	0.863			
		ad4	0.864			
		ad5	0.853			
Purchase intention	Prendergast et al. (2010)	pu1	0.850	0.855	0.951	0.818
		pu2	0.861			
		pu3	0.884			

Table 3
Inter-correlations among research constructs.

Construct	Mean	SD	1	2	3	4	5	6	7	8
eWOM credibility	4.773	0.884	*0.844*							
P. persuasiveness	4.929	0.819	0.628	*0.925*						
P. informativeness	5.136	0.982	0.416	0.647	*0.849*					
eWOM usefulness	5.004	0.943	0.647	0.731	0.790	*0.838*				
Purchase intention	5.028	0.923	0.588	0.672	0.653	0.502	*0.858*			
Source expertise	4.888	0.874	0.736	0.797	0.773	0.784	0.753	*0.849*		
Source trustworthiness	4.982	0.771	0.710	0.764	0.679	0.775	0.640	0.807	*0.898*	
eWOM adoption	5.022	0.928	0.716	0.745	0.653	0.759	0.791	0.771	0.770	*0.850*

Notes: Values on the diagonal [Italic] are the square-root of the AVE for each construct; values below the diagonal are the correlations between constructs; SD is standard deviation.

account for most of the covariance among the measures (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). By loading all variables into a principal component factor analysis (Podsakoff et al., 2003), we found that the one common factor explained 48.8% of the variance, showing that it did not account for the majority. As such, CMV can be considered to be unlikely to pose any serious threat to our findings, and so the measurement model was considered satisfactory for further analysis.

4.2. Structural model and hypotheses testing

To test the interrelationships among the research constructs of all the model variables, SEM was carried out. As the PLS method itself cannot directly deliver the magnitudes or significance of the path structural coefficients of the inner model (Wong, 2013), a bootstrapping technique with 1500 subsamples was implemented to test the proposed hypotheses.

As shown in Table 4, the coefficient of determination for R^2 values for all predicted variables are above the critical value 0.1, as the R^2 of all constructs are above 0.5, which can be considered to indicate substantial level of explanation, according to Schroer and Hertel (2009). Table 4 and Fig. 3 show the interrelationships among constructs.

The analytical results indicate that the perceived informativeness ($\gamma1 = 0.238$, $p < 0.001$) and the perceived persuasiveness of the eWOM message ($\gamma2 = 0.317$, $p < 0.001$) significantly influence the perceived usefulness of a piece of eWOM. Therefore, hypotheses H1 and H2 are supported. This result is in line with Zhang et al.

(2014), who found that persuasive messages can help recipients by providing clear reasoning to support their statements, thus encouraging people to accept the related recommendations. Moreover, to determine whether an eWOM message is practical and helpful for their consumption goals, consumers need to cognitively examine both the informativeness and persuasiveness embedded in the eWOM. To some extent, this finding supports previous studies that shed light on different aspects of the content quality of eWOM, such as relevance, comprehensiveness and timeliness. Cheung et al. (2008) found that relevance and comprehensiveness are the main antecedents of usefulness, and Cheung (2014) confirmed the contributions of timeliness and comprehensiveness. It is apparent that low-quality posts that contain incorrect contents, broken links, unrelated, or not detailed information are likely to be seen negatively by consumers (Chang, Yu, & Lu, 2015).

In addition, the path from source expertise to eWOM is significant ($\gamma3 = 0.422$, $p < 0.001$); therefore, H3 is supported. Previous studies have found that source expertise does not reinforce consumer perception of usefulness in different forums or other web-based opinion platforms (Cheung et al., 2008; Liu & Park, 2015). This study, however, finds that source expertise can be presented in various ways on SNSs, boosting the usefulness of that piece of information.

In contrast to our predictions, source trustworthiness had no influence on perceptions of eWOM usefulness ($\gamma4 = 0.032$, $p > 0.1$); thus, H4 is not supported. This finding may indicate that message recipients do not associate the usefulness of messages with source

Table 4
Path coefficients and R^2 of the structural model.

Hypo.	Path	Standardize Estimate	t-value/p-value	R^2
H1	Perceived informativeness→eWOM usefulness ($\gamma1$)	0.238	6.306***	
H2	Perceived persuasiveness→eWOM usefulness ($\gamma2$)	0.317	7.793***	
H3	Source expertise→eWOM usefulness ($\gamma3$)	0.422	7.723***	
H4	Source trustworthiness→eWOM usefulness ($\gamma4$)	0.032	0.701[n.s.]	
H5	Perceived persuasiveness→eWOM credibility ($\gamma5$)	0.324	5.084***	
H6	Source expertise→eWOM credibility ($\gamma6$)	0.338	4.787***	
H7	Source trustworthiness → eWOM credibility ($\gamma7$)	0.573	9.647***	
H8	eWOM usefulness→eWOM adoption ($\beta1$)	0.510	10.251***	
H9	eWOM credibility → eWOM adoption ($\beta2$)	0.386	7.408***	
	eWOM adoption → Purchase intention ($\beta3$)	0.795	19.033***	
Control variables				
	Age → Purchase intention	0.021	0.482[n.s]	
	Gender → Purchase intention	−0.012	0.299[n.s]	
Construct				
	eWOM usefulness			0.848
	Perceived credibility			0.713
	eWOM adoption			0.663
	Purchase Intention			0.800

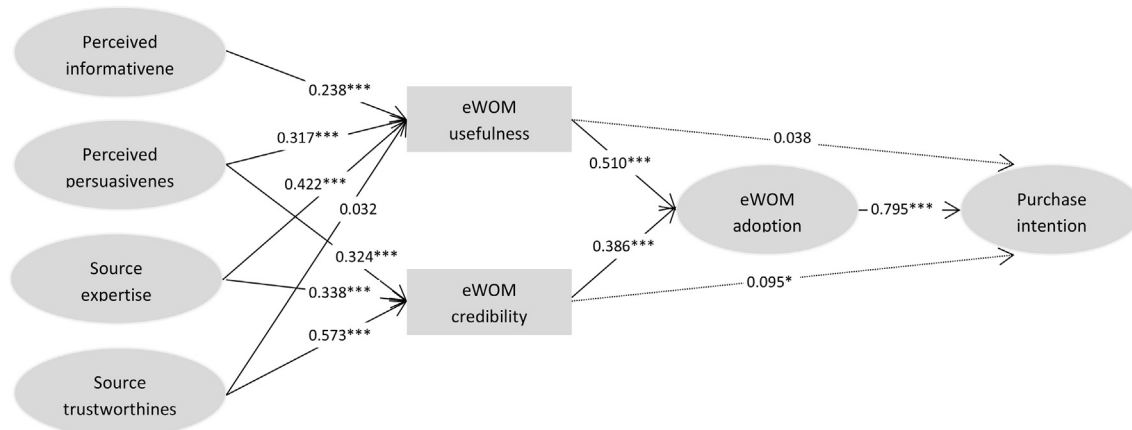Notes: *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$; n.s.: non-significant.

Fig. 3. Structural equation model of this study.

trustworthiness. One possible explanation is that consumers make a marginal effort to gauge usefulness, and source expertise seems to outweigh source trustworthiness. While information regarding source expertise is available in SNSs, it remains relatively complex to assess the trustworthiness of eWOM senders based on this alone. Moreover, the unsupported link between source trustworthiness and eWOM usefulness found in this work is consistent with the results of Cheung et al. (2008).

Additionally, our results show that perceived persuasiveness ($\gamma 5 = 0.324$, $p < 0.001$), source expertise ($\gamma 6 = 0.338$, $p < 0.001$), and source trustworthiness ($\gamma 7 = 0.573$, $p < 0.001$) are also significant predictors of eWOM credibility; as a result, H5, H6, and H7 are supported. This supports Gunawan and Huarng (2015), who suggested that consumers seem to give more weight to assessing source credibility than to argument quality in relation to eWOM initiated by viral marketing campaigns on SNSs (Gunawan & Huarng, 2015). If receivers recognize that eWOM information is being posted by a highly credible profile owner, they will tend to assess it as having a higher level of credibility (Cheung & Thadani, 2012). Due to their knowledge and experience, experts should be better able to persuade other consumers and thus appear more credible (Wangenheim & Bayón, 2004). This study found that, given that eWOM recipients are strongly motivated to assess the credibility of eWOM, they tend to rely more on the strength of the argument enclosed in the message to reduce uncertainty and avoid information asymmetry (Fang, 2014).

Furthermore, both eWOM usefulness and eWOM credibility were shown to have a positive influence on eWOM adoption ($\beta 1 = 0.510$; $\beta 2 = 0.386$, $p < 0.001$), supporting hypotheses H8 and H9. Both eWOM usefulness and credibility are of paramount importance in the consumer decision to adopt an eWOM message. Overall, the simultaneous consideration of both perceived credibility and perceived usefulness accounts for a substantial amount of the variance in adoption (66.3%). Therefore, the results of this study show that considering perceived usefulness alone leads to an incomplete understanding of consumer adoption behaviors in relation to eWOM on SNSs (Oum & Han, 2011). This finding is in line with those of prior studies, confirming the causal linkage between perceived usefulness and information adoption (Cheung et al., 2008; Liu & Zhang, 2010), as well as the relationship between perceived credibility and information adoption (Fang, 2014; Lis, 2013; Luo et al., 2013). SNSs stimulate peer-to-peer interactions, producing informational and emotional support through the sharing of knowledge, experience, and information. This supportive climate reduces uncertainty and enhances the usefulness of eWOM obtained from these platforms, which then encourages participants

to use the related information (Hajli, 2018). As such, judgments of both usefulness and credibility can be regarded as consumer-empowering endeavors that can support consumers in applying eWOM information to their future decisions (Willemsen, 2013). Such results suggest that eWOM senders should focus on the development of consumer perceptions of credibility and usefulness to enhance the consumer adoption of the information posted on SNSs, harnessing the opportunities that SNSs create for businesses.

4.3. The mediation effect of eWOM adoption

A significant relationship between eWOM usefulness and purchase intention was found ($\gamma 8 = 0.703$, $p < 0.001$). However when eWOM adoption was added to the model, the direct influence of eWOM usefulness on purchase intention was considerably reduced and not significant ($\gamma 9 = 0.061$, $p > 0.05$); this supports the full mediation effect of eWOM adoption. Additionally, the R^2 for purchase intention became significantly higher when eWOM adoption was incorporated into the model (up by 30.20 percentage points, from 0.494 to 0.796). These results demonstrate that eWOM adoption is a full mediator of the eWOM usefulness—purchase intention link. In the same way, a significant relationship between eWOM credibility and purchase intention was found ($\gamma 10 = 0.688$, $p < 0.001$). Again, when eWOM adoption was added to the model, the direct impact of eWOM credibility and purchase intention was considerably reduced ($\gamma 10 = 0.103$, $p < 0.001$); therefore, eWOM adoption is a partial mediator of the eWOM credibility—purchase intention link.

Moreover, a Sobel test was carried out to quantify the significance of mediating influences among other variables (Sobel, 1982). Specifically, mediation effects are significant when their z statistic values are greater than the cutoff value of the t-value: 1.96. The z-test value for the association of eWOM usefulness → eWOM adoption → purchase intention was 16.990 ($p < 0.001$), thus surpassing the threshold value of 1.96. Similarly, the z-test value for the association of eWOM credibility → eWOM adoption → purchase intention was 16.446 ($p < 0.001$). These results demonstrate that the mediating effects of eWOM adoption on the influences of eWOM usefulness and eWOM credibility on purchase intention are all significant, supporting hypothesis H10. eWOM credibility shows a relatively weak direct effect on purchase intention, while the causal relationship between eWOM usefulness and purchase intention is not significant. Indeed, the results imply a strong mediating role for eWOM adoption in the influence of eWOM usefulness and eWOM credibility on consumer purchase intention, also showing that information adoption from C2C eWOM in SNSs

greatly facilitates consumer intention to purchase the recommended products. Prior studies have also supported a strong link between eWOM adoption and purchase intention (Fan & Miao, 2012; Erkan & Evans, 2016) in discussion forums and online communities. Fan and Miao (2012), in their study of e-commerce consumption intention, found that eWOM credibility positively influences eWOM acceptance, which subsequently affects purchase intention.

By revealing that information adoption is a key mediator, this study's empirical results advance our understanding of the connection between consumer persuasion and consumer decision making, in which eWOM adoption plays a crucial role in creating the impact that eWOM has on purchase behaviors. This finding indicates that there is enormous business potential to be had from capitalizing on eWOM on SNSs, implying that brand marketers should engage in eWOM on SNSs to increase consumers' purchase intention toward focal products.

5. Conclusion and suggestions

Undoubtedly, the eWOM antecedents for source expertise, persuasiveness, and informativeness are crucial factors in the eyes of eWOM receivers when the latter are used to assess the usefulness of the eWOM messages obtained via C2C interaction in SNSs. Notably, source expertise is the strongest predictor of eWOM usefulness; however, the role of source trustworthiness is not confirmed in this study. According to Fang (2014), SNSs may help eWOM recipients better understand eWOM senders using associated information cues in the form of notes, status updates, photos, videos, or messages posted on the sender's personal page. This study thus should encourage eWOM respondents to observe such cues and communicate with the eWOM senders to better assess the information contained in the eWOM. Indeed, consumers may review the past behavior of recommenders (Weiss, Lurie, & MacInnis, 2008) or analyze eWOM messages to assess the degree of expertise they convey (Walther & Jang, 2012).

5.1. Academic implications

It should be noted that the IAM was successfully tested in this study. The following points have implications for information-processing literature and research on eWOM in SNSs. First, this study resolves ambiguities in the existing literature on eWOM antecedents by adopting a re-conceptualization based on Zhang et al. (2014) to interpret the argument quality of eWOM based on only two key constructs, namely, informativeness and persuasiveness. Second, this study further contributes to the existing literature by clarifying differences in consumers' cognitive and affective processes with regard to perceived usefulness and credibility. Specifically, this study points out that, followed by such central cues as informativeness and persuasiveness, source expertise has a dominant influence on the consumer's perception of usefulness. Source trustworthiness has been found to be nonsignificant for predicting eWOM usefulness (Cheung et al., 2008); however, source trustworthiness is the most important factor for the consumer evaluation of the credibility of entire messages. Then, credibility is also fostered by source expertise and the persuasiveness of the focal message. Third, credibility underlines the importance of peripheral influence from source credibility in customer perception in the context of SNSs. Consistent with the recent work of Gunawan and Huarng (2015) and extending other prior studies, this study confirms that source credibility has a weaker impact than argument quality. Fourth, by integrating perceived credibility into the original IAM, this study increases the explanatory power of

eWOM toward consumer adoption, assessing that it is responsible for as much as 66.3 percent of variance. This addresses certain gaps in the literature: Ozuem and Bowen (2016) noted that usefulness is not sufficient for the interpretation and explanation of consumer behavior toward eWOM. Thus, both credibility and usefulness are a generic mechanism through which eWOM antecedents positively influence the adoption of information. It is important for researchers to simultaneously bear in mind both usefulness and credibility as factors for understanding the influence of eWOM in persuasion.

Further, because SNSs can present eWOM content with a greater degree of accessible information regarding the sender than other web-based eWOM, this study is among the few works encouraging respondents to carefully scrutinize C2C eWOM by looking at the recommender's posts, conducting peer communication, and capturing salient cues from the recommender's profile page. These actions appeared to aid the respondents to make better assessments of eWOM, thereby consolidating the capability of the overall research framework presented in this study.

Taking the extra step of highlighting the mediating mechanism of information adoption to convey the influence of eWOM on purchase intention, this study establishes a more complete connection between consumer persuasion and decision making in the domain of SNSs. This suggests that information adoption should not be ignored in the examination of customer psychology in digesting eWOM information with regard to consumer consumption goals. Indeed, with as much as 80 percent of variance of purchase intention being explained by the model, the findings from the survey support that peer-to-peer communication regarding products over SNSs is strongly associated with purchase decisions. As this is the first study to shed light on the whole process of C2C communication influence over networking sites, this study further enhances the appreciation of Gensler, Völckner, Liu-Thompkins, and Wiertz (2013) toward eWOM content stemming from C2C rather than B2C interactions in SNSs.

Overall, bringing a more comprehensive approach to the IAM, this study provides a more nuanced understanding of the consumer psychological mechanisms that are active as they digest C2C eWOM information in a social media context.

5.2. Managerial implications

The findings of this study show that social media can provide a rich basis for C2C eWOM information and thus can have a great influence on consumption decisions. As such, cosmetics brands should pay closer attention to consumer-driven content on SNSs. Although the content of such eWOM is not under companies' control, they still need to stay informed of it. This could be accomplished by engaging in "social care," in which companies seek out group discussions and comments regarding their products, responding to consumers' queries and providing support for customer using the various tools of SNSs. Social care enables companies to manage their reputations by promptly addressing issues that lead consumers to spread negative eWOM, thus preventing the potential impact that such complaints could have on other consumers.

Furthermore, although companies cannot directly influence consumer-generated content, they can do several things to encourage customers to produce more positive brand-related messages, such as using opinion leaders. To identify "market mavens" on social media, managers can utilize monitoring tools such as Google Alert, Sysomos, and so on. They can also run "seeding programs," in which they offer various rewards (such as vouchers or gifts) to seed customers, expecting that their adoption will initiate a contagion (Ryu & Feick, 2007). However, it is key here is

that such programs are only effective when customers are generally satisfied with the product or service in question (Kumar & Reinartz, 2012).

Using the lens of this study, marketers can better grasp how consumers process and evaluate eWOM information from social media to help their shopping decisions. In particular, when searching for advice on social media, seekers of eWOM may prefer to find more credible sources for assistance; thus, companies should be selective in the eWOM senders they seek to make use of. Communicators should be those who project a highly expert user image and receive favorable comments from fans and friends on their public profile pages. Information quality, however, will ultimately determine the success of such peer communication. To improve the quality of their content, skin care brands should encourage consumers to supply more complete information on products in their postings, such as details of their functionality, new features, performance, look and feel, aesthetics, actual usage, and effectiveness. Additionally, recommenders need to frequently update and respond to comments and messages from other consumers who request additional product-related information.

5.3. Limitations and future research directions

There are some drawbacks to the research model of this study, given the limited selection of eWOM antecedents. Although IAM sets a firm basis for the explanation of changes in consumer attitudes under the influence of eWOM, the effects of eWOM on consumer perceptions of credibility may be better explained by adding other dimensions of eWOM from SNSs found in other studies. These dimensions may include task attraction (Fang, 2014), review

consistency (Moran et al., 2014), and recommendation rating, as presented by the number of likes on SNSs (Fang, 2014) and the number of followers a reviewer has (Cheng & Ho, 2015).

Second, the impact of negative online reviews on consumers' decision making are not considered in this study, and this is because the consequences of eWOM are highlighted and achieve a simple and logical research framework. Nevertheless, additional studies, especially experimental studies, can advance our understanding by examining the valence of eWOM messages on SNSs to investigate whether the persuasion process could differ between positive and negative reviews. Third, the sample used in this work was a student population, which is a low-income group. A more diverse sample of SNS and cosmetics users of different ages and professions would help generalize the results. We also sampled various brands of skin care products in our data analysis, with a limited sample size of 314 respondents. A larger sample size would thus be necessary to provide more precise results relative to the research model. Fourth, since this study examined skin care as a focal product, additional research could explore other product categories. This would enable us to examine whether there are any differences in the effects of eWOM among different commodities or services.

Appendix. Summary of measurement scale

Construct items

Constructs	Items	References
Perceived informativeness	Overall, the product-related information is: Relevant Complete Timely	Zhang et al. (2014)
Perceived persuasiveness	Overall, the positive argument is: Convincing Strong Good	Zhang et al. (2014)
Source expertise	The profile owner is: Knowledgeable in evaluating skincare product An expert in evaluating the quality of skincare products Highly experienced in consuming skincare products. Capable of providing product-related information and knowledge in the form of posts and comments compared to others	Fang (2014)
Source trustworthiness	The profile owner is: Undependable Honest Reliable Sincere Trustworthy	Lis (2013); Ohanian (1991)
Perceived eWOM usefulness	I think the overall information is: Valuable Informative Helpful	Sussman and Siegal (2003)
Perceived eWOM credibility	I think the overall information is: Factual Accurate Credible	Fang (2014); Cheung et al. (2009)
eWOM adoption	To what extent do you agree with the information? The post contributed to my knowledge of the product discussed The post made it easier for me to make my purchase decision The post enhanced my effectiveness in making a purchase decision The post motivated me to take purchasing action	Fang (2014)
Purchase intention	It is very likely that I will buy the product I will purchase the product next time I need a product I will definitely try the product	Prendergast et al. (2010)

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