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Role of gender differences on individuals' responses to electronic word-of-mouth in social interactions

Jonghak Sun

Seokwoo Song

Deanna House
University of Nebraska at Omaha

Mintaek Kwon

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Jonghak Sun, Department of Business Administration, Chonbuk National University, Jeonju-si, Jeollabuk-do, Republic of Korea
Seokwoo Song, Goddard School of Business & Economics, Weber State University, Ogden, UT, USA
Deanna House, Cybersecurity, University of Tampa, Tampa, USA
and
Mintaek Kwon, Department of Distribution & Trade, Woosuk University, Wanju-gun, Republic of Korea

ABSTRACT

Considering the significant effects of electronic Word-of-Mouth (eWOM), this research explores how individuals respond to eWOM and whether gender differences exist in their perceptions. To do so, by employing the perspective of social interactions, we examine the proposed relationships are different between genders. We collected data using a survey and tested the hypotheses via path analysis. The results indicate that, gender differences were found specific to search effort, product involvement, and information credibility. Women with strong online ties had a tendency to be more involved in the product information and to find the information more credible. In addition, when women had an increased search effort, they were more likely to have intention spread eWOM. This research provides insights to further research related to gender differences in eWOM by discussing implications for research and practice.

I. Introduction

Electronic Word of Mouth (eWOM) has taken a new light as online purchases have gained in popularity. eWOM can be defined as "*any positive or negative statement made by potential, actual, or former customers about a product or company, which is made available to a multitude of people and institutions via the Internet*' (Hennig-Thurau et al. 2004, 39). eWOM has dramatically transformed the way that consumers search, process, and communicate product information (Duan, Gu, and Whinston 2008). By simply navigating to websites such as www.epinions.com, www.amazon.com, or www.citysearch.com, people can not only gain access to product reviews easily, but also share their own purchasing experiences with others

readily (Lee, Park, and Han 2008). eWOM has become one of the most important communication tools for consumers' purchase decisions and behaviours (Ayeh, Au, and Law 2013; Park and Lee 2008). In fact, eWOM is known to provide more reliable and trustworthy information than marketer-generated online advertisements (Brown, Broderick, and Lee 2007; Bickart and Schindler 2001).

Previous studies have emphasized individual personal differences in psychological perceptions and motivational reasons to explain the antecedents and consequences of eWOM. Much of human behaviour, however, is not represented solely by personal properties and characteristics (Bagozzi 2007). Widely recognized, eWOM is a social interaction via the Internet which involves exchanging, sharing, and disseminating opinions or experiences among individuals (Wang and Chang 2013). Through interactive online engagement, individuals could develop different levels of social interaction that influence their decision-making processes and behaviours (Steffes and Burgee 2009; De Bruyn and Lilien 2008). Moreover, some studies (e.g. Cheung and Lee 2012; Shen et al. 2016) have made significant strides in the eWOM research area by employing the concepts of social ties and tie strengths (Brown and Reingen 1987) while also considering the dynamics of social interactions. Therefore, in order to understand how individuals respond to eWOM messages, it would be more appropriate to examine eWOM concerns through the perspective of social interaction and tie strength.

Numerous studies suggest that gender plays an important role in the behavioral and social domains such as information processing (Darley and Smith 1995), information technology use (Weiser 2000; Choi and Kim 2014), consumer attitudes and behaviours (Bae and Lee 2011; Awad and Ragowsky 2008), and interpersonal relationships and communication (Gefen and Ridings 2005). One avenue that has been underexplored, however, is gender differences in social ties within the eWOM context. Relatively little is known about the role of social ties and tie strengths, especially considering the roles of gender in the context of eWOM.

Social ties and tie strength are areas of significance particularly when trying to understand consumer attitudes and behaviours in the eWOM context (Shen et al. 2016; Steffes and Burgee 2009; De Bruyn and Lilien 2008). Extant studies have suggested that social ties are a critical component in understanding decision-making processes (Wang and Chang 2013), information processing (Brown, Broderick, and Lee 2007), and WOM communication (Brown and Reingen 1987; Shen et al. 2016) through the dynamics of social interactions. Social ties can be defined as a social interaction between individuals within a social network (Brown and Reingen 1987). The strength of a social tie refers to "the '*combination of the amount of time, the emotional intensity, the intimacy (mutual confiding), and reciprocal services*' (Granovetter 1973, 1361). Thus, the strength of a tie within a social network may be different depending on the number and types of resources that individuals share and exchange (Brown, Broderick, and Lee 2007). Tie strength also could be characterized as a continuum ranging from strong ties to weak ties (Granovetter 1973). Strong ties are associated with emotional closeness and personal identity, while weak ties lack a developed friendship or shared history (Leonard and Onyx 2003).

In line with early Internet research, it is tempting to argue that online social ties and its associated tie strength are a typical example of a weak tie, since relationships on the Internet are usually less personal with unknown and unconfirmed identities having little or no previous contacts (Chatterjee 2001; Chu and Kim 2011). However, more recent evidence has suggested that as people use the Internet as a primary mode of personal communication, online social ties may be considered as effective for both maintaining close relationships with family and friends and deepening linkages with distant others having similar interests, opinions, and thoughts (Sun et al. 2006; Chu and Kim 2011). Consequently, the online tie strength individuals acquire through their interactions with others would lead to their eWOM responses (Wang and Chang 2013).

Based on this perspective, we explore the gender differences in the effects of tie strength on search effort, product involvement, and information credibility within the eWOM context. Therefore, the current research aims to further examine what and how social ties work in the eWOM context, particularly by investigating the moderating roles of gender. Accordingly, this paper will address the research question: *Do males and females differ in online social tie strength through the causal process of consumers' intention to spread eWOM intention?*

Research results are expected to provide valuable insights and knowledge associated with gender's social roles and its impacts on eWOM communications. The paper is organized as follows. First, the paper presents a research model, corresponding to the research question identified above. Hypotheses based upon the research model are developed. Then, the paper describes the research methodology. Subsequently, the paper presents the results and discusses the findings. The paper is concluded with a discussion of the limitations and the implications for future studies.

II. Research model and hypotheses

Gender differences in eWOM

There has been extant evidence to support gender differences at the biological, social, and behavioural level (Putrevu 2001). The literature demonstrates that men and women show different attitudes and patterns in perceiving and utilizing information in an online context (Choi and Kim 2014; Bae and Lee 2011), because they have different motives of online behaviours (Weiser 2000). For instance, men are likely to engage on the Internet and eWOM mainly for entertainment and pragmatic purposes, while women tend to focus on interpersonal relationships and communication for cooperation and collaboration (Brannon 1999). Likely as a result of these different motivations, women seek socially connected support and emotion, whereas men often focus more on reinforcing social standing and dominance status in the online context (Awad and Ragowsky 2008; Maceli, Baack, and Wachter 2015). Using a theoretical lens (e.g. socialization role theory, gender identity theory, sociolinguistics theory), these studies have found that females tend to place more importance in social relationships and communication than males (Meyers-

Levy and Maheswaran 1991). Additionally, females are likely to pay more attention and put more weight on negative over positive information (Skowronski and Carlston 1989). These two findings taken together propose that gender differences are relevant to individuals' perceptions to social relationships in the context of eWOM information.

Gender differences in external search effort

External search effort is defined as '*the degree of attention, perception, and effort directed toward obtaining environmental data or information…*' (Beatty and Smith 1987, 85). Although both strong and weak ties are known to play a certain role in a consumer's information processing, strong ties are more likely to facilitate information referral and searching activities than weak ties (Brown and Reingen 1987). In addition, social influence perspective with a notion of 'normative and informational influence' (e.g. Bearden, Netemeyer, and Teel 1989) provides a potential explanation of how an individual's social ties relate to external search effort. When tie strength is high, individuals are under strong normative influences from the tie and they are more likely to conform to norms of the tie than those under weak ties. Thus, they are highly motivated to search for additional information to learn more from the social tie. Meanwhile, being exposed to the information from strong ties, they move under informational influence, which in turn helps them understand and absorb the attitudes and behaviours that are expected from the tie (Wang, Yu, and Wei 2012). Taken together, the stronger an individual is connected to an online social tie, the more search efforts he or she devotes in processing eWOM messages (Bansal and Voyer 2000).

Further, search effort is a critical component in individuals' evaluation and decision-making processes (Beatty and Smith 1987; Schmidt and Spreng 1996). According to Darley, Blankson, and Luethge (2010)'s five-stage framework for online consumer behavior, internal and external search effort is directly related to online consumers' beliefs, attitudes, and intentions. Furthermore, some empirical studies have reported that online information search has a positive impact on online consumers' interest (Bickart and Schindler 2001), purchase intention and behaviour (Kim and Lee 2008). The presence of more eWOM messages resulting from external search effort leads to individuals' increased evoked set size and amount of elaboration (Elliott 1994). Based on this discussion, it is suggested that an individual's search efforts on the Internet would be positively related to the subsequent stage in online consumer behaviour (Darley, Blankson, and Luethge 2010; López and Sicilia 2014).

Gender gaps in social relationships and tie strength on the Internet may carry over to an individual's information seeking activities. Gender differences in online information search behaviour are supported by previous empirical findings that compared to men, women use the Internet more to gather information and are more focused on elaborating complicated information (Richard et al. 2010). As described by selectivity hypotheses (Meyers-Levy 1988) and gender socialization perspective (Brannon 1999), women tend to search for all available

information in a more comprehensive and effortful fashion, but men are likely to depend on only heuristics and salient information to reduce time and cost (Bae and Lee 2011; Sun et al. 2010). In the context of eWOM, this explanation suggests that women enjoy the information search process itself, rather than the information they find, thus they spend more time and effort in searching relevant information that can help them increase social connectedness with each other. From these discussions, we hypothesize that:

H1: The effect of tie strength on external search efforts is significantly different from gender.
H2: The effect of external search efforts on intention to spread eWOM is significantly different from gender.

Gender differences in product involvement

Product involvement is defined as a consumer's perceived relatedness attaining to a product class (Zaichkowsky 1985). According to social influence perspective (Bearden, Netemeyer, and Teel 1989), product involvement is influenced not only by personal needs and values, but also by social or relational ties with family members, personal contacts, and other social groups. Recent works on eWOM have also shown that individuals' social ties with an online community are a key driver of their value, interest, or emotional attachment (Wang, Yu, and Wei 2012; Shih, Lai, and Cheng 2013). In fact, virtual cyberspaces are the channels for exchanging both information and social relationships (Cheung et al. 2009), in which tie strength drives individuals to share personal needs or product preferences (Wang, Yu, and Wei 2012). Among the great number of varying online product review sites, an individual focuses voluntarily on a preferred website, and then forms a different level of tie strength from others (Chu and Kim 2011). Individuals with strong ties on websites are more likely to engage in online consumer behaviours (e.g. searching others' opinions and experiences about products, posting comments, recommending or rejecting others' reviews) than those with weak ties (Zhang, Zhao, and Lee 2013). In doing so, individuals with strong ties tend to be more interested and perceive a higher level of relevance toward products within the online sites than those with weak ties (Van Noort, Antheunis, Van Reijmersdal 2012). Based on the discussion above, it is believed that different levels of tie strength on the Internet may be associated with consumers' product involvement and concerns (Kumar and Benbasat 2006).

As discussed, product involvement reflects interest and emotional attachment to a product class (Richins and Bloch 1986). Thus, recent consumer research in eWOM focuses on the effects of product involvement (Lee, Park, and Han 2008; Park and Lee 2008), with numerous empirical studies demonstrating the significant role of product involvement in explaining online shoppers' intention and behaviour (Riegner 2007) as well as information flow (Zhang, Zhao, and Lee 2013). Even though there seem to be little empirical findings about the direct effect of product involvement on intention to spread eWOM, Petty and Cacioppo (1986)'s Elaboration Likelihood Model (ELM) provides a sound theoretical view to presume the linkage. The theory

states that individuals process information either by a central or peripheral route. Individuals under high product involvement are likely motivated to rely on the central route and make decisions based on the reasoned/logical path. In contrary, those under low product involvement tend to follow the peripheral route and make decisions based feelings or perceptions (Park and Lee 2008). From this perspective, researchers have suggested that individuals who perceive greater relevance and importance toward the products may engage in greater eWOM communications than less involved consumers (Lee, Park, and Han 2008). Furthermore, individuals reading eWOM are likely to be motivated to transmit those unique consuming experiences to others, rather than have self-enjoyment or fun (Khammash and Griffiths 2011).

Gender researchers consistently noted that men are socialized to be independent, and women are known to be interdependent (Brannon 1999). Thus, men are characterized as agentic (assertive, self-centered), woman as communal (friendly, other-oriented) (Putrevu 2001). Furthermore, women are more likely to be concerned with others they are interacting with and share communal interests (Bae and Lee 2011). Due to these differences in socialization and communication, women often tend to maintain their involvement with objects perceived as somewhat important, while men are likely to be involved with those of high importance (Sun et al. 2010). As such, women are often motivated to increase their interests and involvement with objects discussed during eWOM communications, as a sign to support each other emotionally. From these notions, gender differences are assumed to be higher for women, in the relations among tie strength, product involvement, and eWOM engagement. Thus, we propose that:

H3: The effect of tie strength on product involvement is significantly different from gender.
H4: The effect of product involvement on intention to spread eWOM is significantly different from gender.

Gender differences in information credibility of eWOM

Many researchers recognize information credibility as a critical construct in explaining consumer attitudes and behaviours, particularly in the context of eWOM communication (Cheung et al. 2009; Van Noort, Antheunis, and Van Reijmersdal 2012). eWOM credibility refers to the degree to which an individual perceives eWOM as reliable, believable, and trustworthy (Rieh and Danielson 2007). Prior studies have demonstrated that strong ties are perceived as more credible than weak ties. For example, attitudinal and psychological aspects of tie strength such as similarity or homophily (Brown, Broderick, and Lee 2007; Steffes and Burgee 2009) and membership in the online community (De Valck, Van Bruggen, and Wierenga 2009) are found to be significantly influential on a receiver's perceived credibility of the message. Strong ties reflect emotionally close relationships, encouraging people to develop similar understanding, attitudes, and jargon (Granovetter 1973) along with affective support which leads to greater benevolent and competent credibility (Zhang, Zhao, and Lee 2013). Moreover, strong tie strength potentially helps people have a less distrusting nature (e.g. anonymity, uncertainty) of negative eWOM

messages while enabling an increase in credibility in terms of expertise, reliability, and trustworthiness toward the posted messages more than weak ties would (Chu and Kim 2011). Employing dual process perspective from social influence theory, Cheung et al. (2009) also demonstrated that both normative and informational social influences from online forums are significantly related to an individual's perceived online information credibility.

The literature on eWOM credibility has suggested that information credibility relates to a reader's perceptions toward the eWOM information (Cheung et al. 2009; Chu and Kim 2011; Darley and Smith 1993; Shih, Lai, and Cheng 2013). Given that eWOM may be more credible and trustworthy than traditional WOM (Bickart and Schindler 2001), consumer-generated eWOM could be more influential than marketer-generated content in terms of potential consumer attitude and intention (Chatterjee 2001; Park and Lee 2008). Thus, researchers in this area have studied effects on related factors such as the persuasiveness (Pornpitakpan 2004), decision makings (López and Sicilia 2014), adoption (Cheung et al. 2009), and actual behaviours on the eWOM communications. Consequently, when individuals perceive the information to be credible, they may have more confidence in accepting the eWOM content and forming their own intentions such as articulating their own opinions or spreading recommendation referrals (Cheung et al. 2009).

Past empirical research in gender differences in perceived credibility has produced mixed findings (Zhang et al. 2014). For example, some researchers contend that women are more disinclined to give higher credit to the negative eWOM, because women tend to reduce uncertainty and negative outcomes from anonymous sources (Bae and Lee 2011; Garbarino and Strahilevitz 2004). In contrary, others contend that women are more likely to infer higher credibility from all available online cues because women are more susceptible to social influences and more easily to accept others' opinions, resulting in more trusts (Eagly 1987; Cheung et al. 2009). These conflicting perspectives are carried over to empirical works. For example, Morris et al. (2012) reported no gender effect on tweets credibility, while Darley and Smith (1995) and Flanagin and Metzger (2003) found that men and women differ in perceiving online information credibility. One possible explanation for the mixed results is that most previous studies did not investigate the critical effects of tie strength on online information credibility. Chatterjee (2001)'s study showed that the effects of negative online reviews interact with the strength of relationship with online retailers. By considering tie strength, we could extend our understandings about the gender differences in perceived information credibility within eWOM context.

H5: The effect of tie strength on information credibility is significantly different from gender.
H6: The effect of information credibility on intention to spread eWOM is significantly different from gender.

Based on the discussions from social ties (Granovetter 1973) and gender differences above,

the research model is described in Figure 1.

Figure 1. Research model.
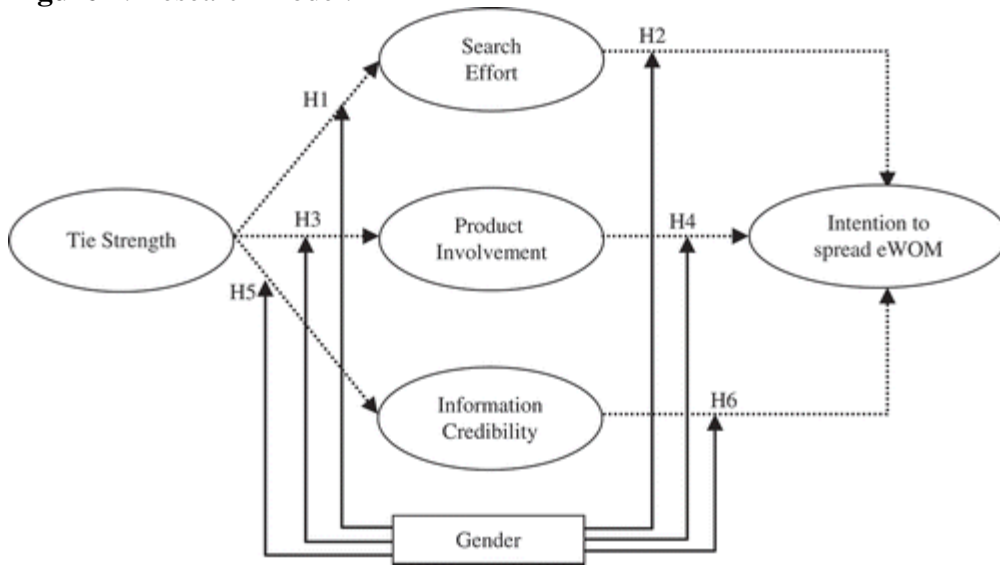
III. Research methodology and testing hypotheses

The survey method was used to collect data for testing the hypotheses. This study selected and refined an actual message, related to the display problem of a smartphone (See Appendix) from the review site www.daum.net. The measurement items were developed by adapting items validated by the previous studies. The questionnaire was developed in English and then translated into Korean. To reduce semantic discrepancy, the questionnaire was translated back into English and carefully revised. A pilot test was undertaken with customers visiting consumer electronics stores in Korea, which resulted in some refinement to the questionnaire.

A total of 400 responses were distributed and collected. Out of the 400 responses, 23 had incomplete data and were eliminated from further analysis. As a result, 377 responses were used for data analysis. The respondents were asked to read the eWOM messages, modified based on an actual online complaint message and replies, before responding to the survey questions. The distribution of subjects regarding age, gender, and online purchase or complaint experience, corresponds to that of the general population of Internet users in Korea. The demographic profiles of the sample are shown in Table 1.

Table 1. Sample demographics. (Table view)

	Sample (%)
Gender	
Male	193(51.2%)
Female	184(48.8%)
Total	377(100%)
Age	
0–19	10(2.7%)
20–29	142(37.7%)

	Sample (%)
30–39	111(29.4%)
40–49	76(20.2%)
50 and over	38(10.1%)
Total	377(100%)
Hours using the Internet per week	
0–1h	11(2.9%)
1–3 hours	39(10.3%)
3–6 hours	53(14.1%)
6–10 hours	86(22.8%)
10–20 hours	119(31.6%)
20 hours and over	69(18.3%)
Total	377(100%)
Online purchase experience	
None	37(9.8%)
1–5 times	70(18.6%)
6–10 times	91(24.1%)
11–30 times	107(28.4%)
31 times and over	72(19.1%)
Total	377(100%)
Online purchase amount (for the last 6 months)	
None	35(9.3%)
$1-$100	121(32.1%)
$100-$500	168(44.6%)
$500 and over	53(14.1%)
Total	377(100%)

Measurement of research variables

The items for eWOM were adapted from WOM measures given by Maxham and Netemeyer (2003). The items for information credibility were adapted from Darley and Smith (1993), while the items for product involvement were adapted from Zaichkowsky's (1985) multi-item scales, which have been widely used in prior studies. The items for external search efforts were adapted from Teo (2002). Finally, the items used to measures tie strength were adapted from Sun et al. (2006). Product involvement and information credibility were measured using semantic differential scales, while the remaining measurement items had 7-point Likert scales (see Table 3). Table 2 reports the descriptive statistics, composite reliability, and correlations between variables.

Table 2. CR, correlations, and AVE of research variables (*N* = 377). (Table view)

					Correlations				
	Means	S.D.	C.R.	AVE	1	2	3	4	5
1. Tie strength	3.74	1.61	.948	.820	**.905**				

	Means	S.D.	C.R.	AVE	Correlations				
					1	2	3	4	5
2. Search effort	4.74	1.27	.953	.835	.358	**.914**			
3. Product involvement	4.60	1.36	.946	.853	.109	.296	**.923**		
4. Information credibility	4.50	1.44	.935	.782	.581	.495	.249	**.884**	
5. Intention eWOM	4.61	1.28	.930	.817	.439	.514	.341	.461	**.904**

CR: Composite Reliability; **AVE**: Average Variance Extracted
  Boldface numbers on the diagonal are the square roots of the AVE values

Table 3. Exploratory factor loading for research variables ($N = 377$). ([Table view](#))

Survey Items	Component				
	1	2	3	4	5
TS1: Since getting on the Internet, I have become more connected to people like me.		.873			
TS2: Since getting on the Internet, I have become more connected to people who share my hobbies/recreational activities through the Internet.		.872			
TS3: Through the Internet, I have become more connected to people who share similar opinions and thoughts.		.840			
TS4: I have become more connected to people in similar life situations (e.g. self-help groups, support groups) through the Internet		.812			
SE1: I spend a lot of time surfing the websites before I decide upon online purchase.	.859				
SE2: I make a lot of visits to sites before the purchase of products online.	.878				
SE3: I spend a lot of time surfing the websites for information about online products.	.884				
SE4: Usually, I spend a lot of effort getting information that would be helpful in decision-making of online purchase	.802				
PI1: very unimportant vs. very important				.894	
PI2: very irrelevant vs. very relevant				.901	
PI3: means nothing vs. means a lot				.914	
IC1: In the message you just read, how factual do think the claim was? Not at all factual vs. completely factual)			.800		
IC2: In the message above, how believable do you think the claim was? Not at believable vs. completely believable)			.810		
IC3: In the message above, how truthful do you think the claim was? Not at all truthful vs. Completely truthful			.805		

Survey Items	Component				
	1	2	3	4	5
IC4: Overall, how credible do you think the claim was? Not at all credible vs. Completely credible			.793		
WOM1: Are you going to spread the message in the scenario you just read to family members, friends, or other acquaintances?					.792
WOM2: I would recommend my family members, friends, or other acquaintances to read the message in the scenario.					.819
WOM3: If my family members, friends, or other acquaintances were looking to purchase the same or similar product above, I would tell them to find and read the message in the scenario.					.857
Eigenvalue	7.75	2.69	1.88	1.40	1.15
Explained Variance (%)	18.8	18.6	17.1	14.5	13.6

IC: Information Credibility, PI: Product Involvement, WOM: Word-of-Mouth, SE: Search Effort, TS: Tie Strength.

 * The values less than .4 have been suppressed to display clarity of presentation.

Model assessment

Reliability for each construct was tested through composite reliability (CR). If CR values are less than 0.70, the items may be unrelated or measuring more than one construct. The values of reliability measures range from .930 to .953 (see Table 2), thus deemed acceptable (Fornell and Larcker 1981). Convergent validity was examined by average variance extracted (AVE) and factor analysis results. As presented in Table 2, AVE scores for all constructs are between .782 and .853, which is well above 0.5, the recommend benchmark for good convergent validity. In Table 3, the result of a varimax-rotated principal component factor analysis also showed an acceptable level of convergent validity in that all of the items loaded on their own corresponding constructs. Discriminant validity was assessed by using the results of exploratory factor analysis. The results showed that a total of five factors were extracted, which matched the constructs in the research model. The five-factor solution explained 82.6% of the variation, and there was no cross loading above 0.40 (see Table 3). Another criterion is that the square root of AVE should be greater than the correlation between a construct and any other construct (Fornell and Larcker 1981). Seen in Table 2, the square root of the AVEs (on the diagonal) is indeed greater than the corresponding correlations, which indicates good discriminant validities.

 Common method variance that may cause any potential inflation problem was examined, which refers to variance resulting from the use of a common method rather than from the construct itself (Podsakoff et al. 2003). Harman's single-factor test (Podsakoff et al. 2003) was conducted, in which all 18 items were analyzed by using an un-rotated principal components factor analysis. The one-single factor accounted for 43.0% of the variance, which indicated that

no general factor was apparent in the un-rotated factor solution. The results indicate that common method variance is not a major problem in this study (Scott and Bruce 1994).

Testing research model

AMOS (Arbuckle 2006) was used to examine the research model through structural equation modelling. To assess the fit of the hypothesized model, several fit indices are used. As shown in Table 3, all fit indices of the structural equation modelling estimation (normed Chi-square, RMSEA, GFI, CFI, TLI, and NFI) are desirably at or well above the recommended threshold values, suggesting the adequacy of the research model for further statistical analysis.

The path analysis for the SEM model (Figure 1) was conducted to examine the proposed relationships. The results display the significance of the effects, along with the path coefficients, standardized estimates, chi-square values for gender difference, and the corresponding p-value levels. The multi-group SEM model for gender differences is estimated to test if the effect of relationship is statistically different across gender. Figure 2 and Table 5 show the results of testing gender differences for all paths. In Table 4, the structural multi-group model also shows good fit (RMSEA = .048, NFI = .924, TLI = .955). The chi-square test with the structural multi-group model is found to be significantly different (χ^2/df = 1.84, $p < .001$), suggesting that gender has significant moderating effects.

Table 4. Goodness-of-fit indices for the research model. (Table view)

	Model 1 combined	Model 2 with group male vs. female	Desired levels
χ^2	291.16	461.61	Smaller
d.f.	125	250	
χ^2/d.f.	2.33	1.84	<3.0
p	.000	.000	
RMSEA	.057	.048	<0.06
GFI	.921	.883	>.90 (Excellent) >.80 (Acceptable)
NFI	.950	.924	>0.90
TLI	.964	.955	>0.90
CFI	.970	.963	>0.90

Table 5. Estimates for the research model[+.] (Table view)

	Model 1	Model 2		
	Full Model (n = 377)	with Males (n = 193)	with Females (n = 184)	Gender Difference
H1: Tie Strength→Search Effort	.355(7.12***)	.269(3.58***)	.454(6.88***)	χ^2 = 3.32*, df = 1
H2: Search Effort→Intention eWoM	.294(5.97***)	.220(3.08***)	.431(6.01***)	χ^2 = 4.25**, df = 1
H3: Tie Strength→Involvement	.150(2.748***)	.058(.754)	.281(3.62***)	χ^2 = 4.03**, df = 1
H4: Involvement→ Intention eWoM	.158(4.20***)	.145(2.42**)	.1513.21***)	χ^2 = .005, df = 1
H5: Tie Strength→Credibility	.638(11.37***)	.516(6.24***)	.751(9.93***)	χ^2 = 4.22**, df = 1
H6: Credibility→ Intention eWoM	.253(5.47***)	.228 (3.26***)	.257(4.20***)	χ^2 = .098, df = 1

[+]Standard Estimates (value of C.R.) in the table
***$p < .01$ **$p < .05$ *$p < .10$.

Figure 2. Testing result for gender differences.
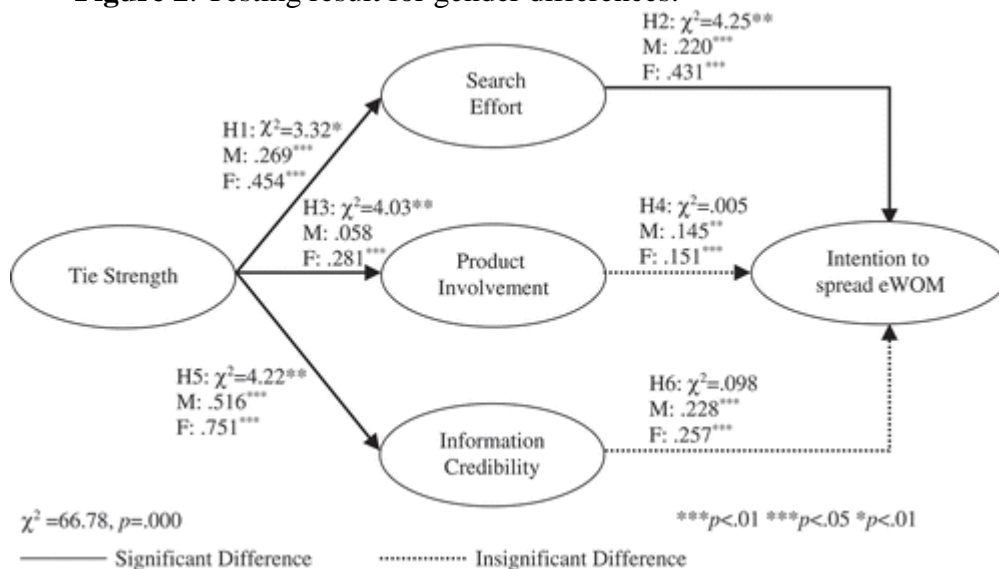
As presented in Table 5 and Figure 2, the gender difference was found in four paths except for two ones (H4 and H6) statistically significant, suggesting that H1, H2, H3, and H5 are supported. With respect to H1, tie strength is positively related to search effort for males (β = .269, $p < .01$) and females (β = .454, $p < .01$). With a more prominent effect for females, the difference is significant (χ^2 = 3.32, df = 1). Regarding H2, it was found that search effort is a stronger determinant of intention to spread eWOM for females (β = .431, $p < .01$) than for males (β = .220, $p < .01$). When comparing the two groups, the relationship is significant (χ^2 = 4.25,

df = 1, $p < .05$). For H3, tie strength has a significant effect on product involvement for females ($\beta = .281$, $p < .01$), but not for males ($\beta = .058$, ns). The difference in effect was found to be significant ($\chi^2 = 4.03$, df = 1, $p < .05$). Concerning H4, the effect of product involvement on eWOM is positively significant for females ($\beta = .151$, $p < .01$) and males ($\beta = .145$, $p < .05$). However, the gender difference in the relation is insignificant ($\chi^2 = .005$, df = 1). As for H5, tie strength has a significant effect on information credibility for both males ($\beta = .516$, $p < .01$) and females ($\beta = .751$, $p < .01$). The relationship is stronger in the female group, and the difference in effect between gender is also significant ($\chi^2 = 4.22$, df = 1, $p < .05$). With H6, the effect of information credibility on intention to spread eWOM was found to be slightly stronger for females ($\beta = .257$, $p < .05$) than males ($\beta = .228$, $p < .05$), despite insignificant gender difference in the effects ($\chi^2 = 0.098$, df = 1).

IV. Discussion and conclusion

Discussion

This research attempts to explore whether gender differences exist in individuals' response to eWOM messages. More particularly, the role of gender differences in the hypothesized relationships were examined, through the perspective of social interactions in the eWOM context. In our study, out of six hypotheses, four were supported, and two unsupported. Our findings related to gender differences were somewhat consistent with previous research (e.g. Awad and Ragowsky 2008; Maceli, Baack, and Wachter 2015) in that an individual's responses to eWOM are different across gender.

Firstly, there was a significant difference between men and women related to tie strength and search effort; the effect was slightly greater for women than for men. The findings are evident when integrating Meyers-Levy (1988)'s Selectivity Model with Brannon (1999)'s view. Additionally, the effect of the link between search effort and intention to spread eWOM was stronger for women than for men. Taken together, when they have strong online ties, women are more likely to search all available information in a comprehensive and effortful manner, and more frequently communicate the other-generated information with each other on the Internet.

Secondly, we found that the positive impact of tie strength on product involvement was significantly stronger for women than for men. These findings support prior studies that women are likely to put greater weight on social harmony, thereby women could easily absorb sentiment and sympathize with others' opinions and interests, especially when they interact with those emotionally connected (Putrevu 2001).

Thirdly, as discussed earlier in developing the hypothesis, previous studies have reported mixed results on the role of gender differences in online information credibility. Consistently, our results showed that the impact of tie strength on information credibility is significant for both women and men; with women having a significantly stronger effect in the eWOM context. This finding could be interpreted that the stronger women perceive online tie strength, the more likely

they increase credibility in eWOM, while decreasing risk. As a result, they tend to perceive higher credibility of information received from others they are socially connected to.

Lastly, there were no significant gender differences in the effects of product involvement and information credibility on intention to spread eWOM, although that of search effort on was significant. Interestingly, the effect of online tie strength on search effort, product involvement, and information credibility was significantly different for gender. However, the effect of these three factors on intention to spread eWOM was insignificant in two paths; product involvement and information credibility. These research findings seem to be partially consistent with previous studies (e.g. Gefen and Ridings 2005), suggesting that women are more likely to be influenced by online social interaction and support than men are. On the contrary, gender differences in influencing intention to spread eWOM may be narrowed.

Theoretical implications

This research develops a research model to examine what and how social ties work in the eWOM context, particularly by investigating the moderating roles of gender. Our results overall show that the effect of eWOM was more influential for women than men. These results are generally consistent with previous studies, in that communication by the Internet is more pervasive to women than to men (Weiser 2000), and that the primary purpose of using the Internet for women is to maintain social support and relationship (Gefen and Ridings 2005). These results offer an insightful explanation for the gender differences in the eWOM context. According to our results, since women have a strong tendency to be socially connected online, they are more likely to respond to eWOM as a reaction not only to communicate with others but to maintain relationships.

Additionally, going beyond existing literature focusing on individuals' independent, personal perceptions, this study demonstrates well that the aspect of online social interaction is critical in explaining the individuals' responses in the eWOM context. The results of this study also provide a conceptual framework to explore not only various underlying consequences of tie strength, but also the determinants of intention to spread eWOM. The richer and more detailed accounts of individuals' responses to eWOM are expected to deepen our comprehensive understandings in the research area.

Managerial implications

The research provides meaningful implications that can be used by both companies and managers. The major result highlights the gender differences in the effects of online tie strength on individuals' beliefs and attitudes related to eWOM. It is noteworthy for managers to consider our results on gender differences when they initiate the online marketing campaigns. The results offer a guideline for online marketers to be cautioned in managing online social relationships, especially when targeting online women consumers. For instance, companies can increase

positive effects, while reducing the negative effects of consumer reviews, for women by designing promotional online campaigns posting more positive eWOM messages on the available websites. By doing so, online marketers could create more product information and sentiment stressing interpersonal communication and social support, resulting in a healthy online presence.

As found by Kim et al. (2016), even just viewing an online review can create some feelings from readers. Regarding this, the research gives managers a practical insight that they should pay attention to the effects of eWOM messages and the roles of online tie strength. More specifically, managers should attempt to manage online tie strength in a way favourable to the company. For example, online marketers can join key influential websites, provide information that are not advertisements, and reply to questions. In the short term, these marketing efforts increase the volume of positive eWOM surpassing that of negative messages discussed on the websites, resulting in decreased chances for consumers to be exposed to negative eWOM. In the long term, online communication activities by the company probably result in creating stronger online ties with consumers, which help maintain friendly social interactions with the company.

Future studies and limitations

While the authors have worked diligently to address issues related to this paper, there are a few areas of limitation that should be noted. First, the demographics of the participants were similar to the general population of Internet users for the place of study. However, the research collected data related to one product, a smartphone, related to an issue with the display. It is possible that this category could be limiting in a gender-specific study. Thus, future work is needed to verify the study results will be similar for other types of products with different topics and samples. Secondly, by following suggestions from prior literature, we measured online tie strength with four items. However, online tie strength is a complex, multi-dimensional construct so it will be important for future studies to explore various underlying dimensions of online tie strength and develop appropriate measurements for each. Last, to gain more knowledge about gender differences in eWOM context, future studies are necessary to investigate the possible interaction effects of gender and other individual differences (e.g. age, education, occupation), along with different types of eWOM message content (e.g. informative vs. emotional, positive vs. negative). This is necessary because the role of gender differences in eWOM could be apparent from the analysis of interaction among these variables.

Disclosure statement

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Appendix

The Negative eWOM Messages Used for the Survey

Title: My smartphone has a burn-in image on the main screen

I have had a *** smartphone for one week. Today, when I looked at a picture, I noticed that it seems to be burned into the display. For the week I owned it, it did not fall down or get water in it. I don't use it too much for surfing the Internet or playing games. I spent only 1-hour a day at most just using it to make phone calls. It is annoying because it looks like two different pictures overlapped. This problem makes me crazy. When it is on a brighter display, the burn-in image disappears. But in most cases, the burn-in image is always there. I contacted the online seller, but he said because it is not his fault, he is not able to accept it for refund or exchange. It makes me really mad for purchasing this smartphone.

Replies

1.
In my case, I had a very similar problem. The burn-in image was on the upper slide bar and the lower keypad. The service centre will exchange the phone without any extra charges. The service centre guy told me that a failure in the LCD could cause that kind of burn-in image problem. You'd better visit a service centre to help you refund or exchange.

2.
Technically, a burn-in image is impossible because of an LCD malfunction. It doesn't make sense at all. Your smartphone uses *** dot display system. In that system, the burn-in image is not possible in a week. I guess your phone was physically damaged when you dropped it.

3.
I had the same trouble. This product had a very limited display. Whenever I used the phone for more than 30 min to watch pictures or video clips, I had the burn-in image on the main display screen.