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AN EXTENDED MODEL OF REVIEW HELPFULNESS: EXPLORING THE ROLE OF TIE STRENGTH, PERCEIVED SIMILARITY, AND NORMATIVE SUSCEPTIBILITY*

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ABSTRACT

Previous studies on review information evaluation focus on the important roles of two key factors namely argument strength and source credibility but pay less attention to how social influence and social relationship exert impact on this information evaluation behavior. To fill this research gap, based on the similarity – attraction theory and social capital theory, we articulate how source credibility is determined by two social relationship factors: tie strength and perceived similarity. Further, drawing upon the social influence model, we propose that the susceptibility to normative influence intensifies the impact exerted on source credibility by tie strength and perceived similarity. Also, relationships between argument strength and review helpfulness and between source credibility and review helpfulness are both moderated by normative susceptibility. A survey is conducted to test the proposed research model and the results suggest that hypotheses are supported. The results offer important and interesting insights to information systems research and practice.

Keywords: eWOM, normative susceptibility, dual process theory, social capital theory, similarity-attraction theory

INTRODUCTION

The advancement of network technology has encouraged the proliferation of eWOM reviews. Electronic Word-Of-Mouth (eWOM), originally developed in the web context where it provides online consumers a platform to share their shopping experience through online communication [29][57] , has recently attracted researchers' attention. Formed from online reviews, eWOM plays a significant role in individuals' decision making. According to the prior eWOM literature, some researchers suggested that eWOM is likely to result in more time to consider the recommended product [29] . Research has also shown eWOM exerts a strong influence on the purchase decisions of consumers [23][51] and on the sales of products in different categories (e.g., books, movies, and hotel rooms) [64] . Thus, this topic about eWOM has attracted researchers' attention.

For example, some researchers have posed questions as to how users evaluate the indirect experience information, how they can easily and quickly find the helpful information, and how those websites recommend or position reviews according to helpfulness[65] . Others [61] find that potential customers are more receptive to those reviews that are perceived more helpful, and thus that more helpful, reviews have stronger influence on users' purchasing decisions. As the perception of review helpfulness reflects a user's information evaluation, research shows that the dual process theory of external information process is an appropriate theoretical foundation for online review studies[65] . Among the dual process researches, heuristic-systematic model (HSM) appears to be valid perspectives in explaining the impacts of eWOM on online consumers [11] [23] . For example, Chen (2014) applied HSM to explain individuals' healthy decision-making process. Besides, [60] developed a research model to identify the factors that are important to consumers' purchase processing by using HSM.

Since eWOM raised from a possibly unlimited number of unknown participants in online contexts, most reviews were contributed from strangers on the Internet [59] . However, nowadays some of the websites, such as Dianping (www.dianping.com) from China, try to integrate the eWOM services with the social networking services. It means people can gain online friends easily and build relationships with others. Thus, online reviews can come from online friends with social relationships established in networks[59] . From this perspective, it's interesting to investigate how social influence factors such as social relationship in eWOM contexts and susceptibility to social influence of online reviewers can affect the function of eWOM on consumers. Although previous studies drawing upon dual process theories have highlighted that argument strength and source credibility play important roles in the information adoption process, research examining how social relationships and social influence affect online eWOM users is still limited.

In this study, we intend to fill the research gap by capturing the social networking features as well as the individual personalities relevant to social influence. Based on the dual process theories, argument strength and source credibility are included as the pivotal constructs in the research model. Further, we propose two social relationship factors (i.e., tie strength and perceived similarity) as the antecedents of source credibility of online eWOM reviews and users' personality namely the susceptibility to normative influence as the moderator that define the strengths of the relationships between argument strength and review helpfulness, between source credibility and review helpfulness, and the effect the two antecedents exerting on source credibility are also moderated by recipient's susceptibility to normative influence .

THEORETICAL BACKGROUND

Dual Process Theory and Heuristic-Systematic Model

ual process theories provide comprehensive discussions on how individuals process information, establish its validity assessments, and later form decision outcomes[20] . Many models of dual process theories have been applied to explain how people are influenced by received information, and in current literature of dual-process theories, two of the most prevalent models are the elaboration likelihood model (ELM) [50] and the heuristic-systematic model (HSM)[5] . These two models use similar underlying mechanisms to explain the information processing. Both of the central route in the ELM and the systematic processing in the HSM indicate that individuals use high cognitive effort to elaborate information; while the peripheral route in the ELM and the heuristic processing in the HSM suggest individuals adopt heuristics and simple decision rules to quickly form judgments. In this study, we choose HSM rather than ELM to examine individuals' information processing in eWOM contexts.

Heuristic-systematic model examines the influence of both the information content of a received message and factors in the surrounding context [63] . It is theorized to explain broader information processing activities[7] , which differentiate systematic processing from heuristic processing. Applied to persuasion, systematic processing implies that people form or update their attitudes by actively attending to and cognitively elaborating persuasive argumentation[8] . In contrast, heuristic processing specifies that the information recipients spend little effort and rely on accessible cues to gain conclusions[7] . According to the current study, Ferran and Watts[22] used the HSM and highlighted its capability in explaining a wider range of validity-seeking contexts. Zhang and Watts (2008) demonstrated argument quality (systematic processing) and source credibility (heuristic processing) can affect the adoption of online reviews in online communities.

When both systematic and heuristic processing are met, HSM holds that both processing modes can occur simultaneously According to researches, these co-occurrence of processing modes can be described through three theoretical extensions, namely the additivity, attenuation, and bias effect [8][60] . The bias effect indicates that heuristic processing may alter recipients' judgment indirectly through biasing systematic processing[8] . For example, Zhang et al. (2014) used bias effect of HSM to elucidates the interrelationship between heuristic and systematic factors.

Since there are many non-content related cues in online eWOM contexts (e.g., characteristics of information sources), researchers tend to distinguish whether a certain heuristic cue is valid or not; and HSM processing modes also have highlighted the co-occurrence of systematic and heuristic information processing. Thus it is better to apply HSM in the online eWOM contexts than other models from dual process theories. In this study, we attempt to use the heuristic-systematic model to understand the impacts of online consumer reviews.

Social Capital Theory

Social capital theory is concerned with the significance of social relationships as a source of social action [17] as well as value creation[46] . Social capital is defined as "the sum of the actual and potential resources embedded within, and derived from the network of relationships possessed by an individual or social unit" ([46] . It is applied to describe the relational resources deeply rooted in the ongoing relationships between actors within a certain social network which facilitates the various social interactions between them[17] .

Social capital is generally considered to involve three dimensions: structural, cognitive, and relational[46] . Structural capital is "the overall pattern of connections between actors—that is, who you reach and how you reach them" ([46] , p. 244). Structural capital is generated by the structure of a social network and the interactions among actors, including the location of actors and the frequency of communication. It describes the "impersonal configuration of links between people or units" ([46] , p. 244). And cognitive capital is defined as those resources that enable shared interpretations and representations among parties [16] . It emphasizes the common understanding which facilitates interactions among actors in the social network. Finally, relational capital involves assets created and leveraged through social relationships, including trust, trustworthiness, norms, identification, and obligations[46] . These three dimensions of social capital are interrelated such that cognitive and relational capital are regarded to be built on the basis of structural capital[58] .

Similarity-Attraction Theory

The similarity attraction theory was first established in the psychological area [34] , and it suggests that people like and are appealed to others who are similar, rather than dissimilar to themselves [4] . The most suitable explanation for these similarity effects is rewards-of-interacting [21] . In other words, interacting with similar others validates people's views and justifies that they are correct in their thinking. It suggests that people are attracted to those who give them chances to enhance themselves [54] .

Based on that well established theory[4] , some researchers indicated that perceived similarity, was positively associated with attraction [52][54] and the attraction is one form of an attitude that is composed of thought, affect, and behavior related to an individual[24] . The underlying logic is that when one individual perceives that he or she is similar to the other, it would be more likely for the individual to show positive attitudes towards the other.

According to the literature of similarity attraction theory, it is typically examined among strangers [44] , so it is suitable to be used in the eWOM environment where most individuals are unfamiliar with each other. Therefore, in this study, we attempt to

apply the similarity attraction theory to understand the impacts of perceived similarity on argument strengths and source credibility.

Susceptibility to Social Influence

Social influence was a significant focus of the field of social psychology [38] . And this focus was evident in early interest in phenomena ,such as sympathy, imitation, suggestion, the crowd, and group minds. Susceptibility to social influence has been considered as the need to identify or enhance one's image with others through the acquisition, or the willingness to comply to the expectations of others [2] . Generally, researchers have agreed that susceptibility to social influence in groups primarily focuses on two types of influences: informational influence and normative influence [33] .

The susceptibility to informational influence could result from information obtained as evidence about reality and often is based on the receiver's self-judgment of information they have received [19] , whereas susceptibility to normative influence refers to the effect to the individual that arises from the norms of other individuals in their preference of the group [15] . The underlying logic is that when one individual decides to adopt one view from the internet, it might result from the susceptibility to informative or normative influence.

Numerous researches from psychological and consumer research have documented the existence of interpersonal influence upon decision processes[2] . For example, the researcher has suggested that susceptibility to social influence could affect consumer decision processes when they evaluate product [48] . Further, theories and research on social influence in groups suggest that susceptibility to normative influence can be detrimental to important group decision-making [31] . Social psychological studies of susceptibility to influence have suggested that social influence could bring about change in another person [38] . It indicates that social influence could affect beliefs, which in turn affects attitudes and behaviors [25] . In fact, interpersonal influence is manifested through either susceptibility to normative or informational influences [19] . However, considering the virtual context where individuals might find it difficult to justify the authenticity of information directly, we consider the susceptibility to normative influence would play a more significant role under this context. Therefore, in this study, we use the normative susceptibility to understand how it affects individuals' evaluation of reviews under the eWOM environment.

RESEARCH MODEL AND HYPOTHESES

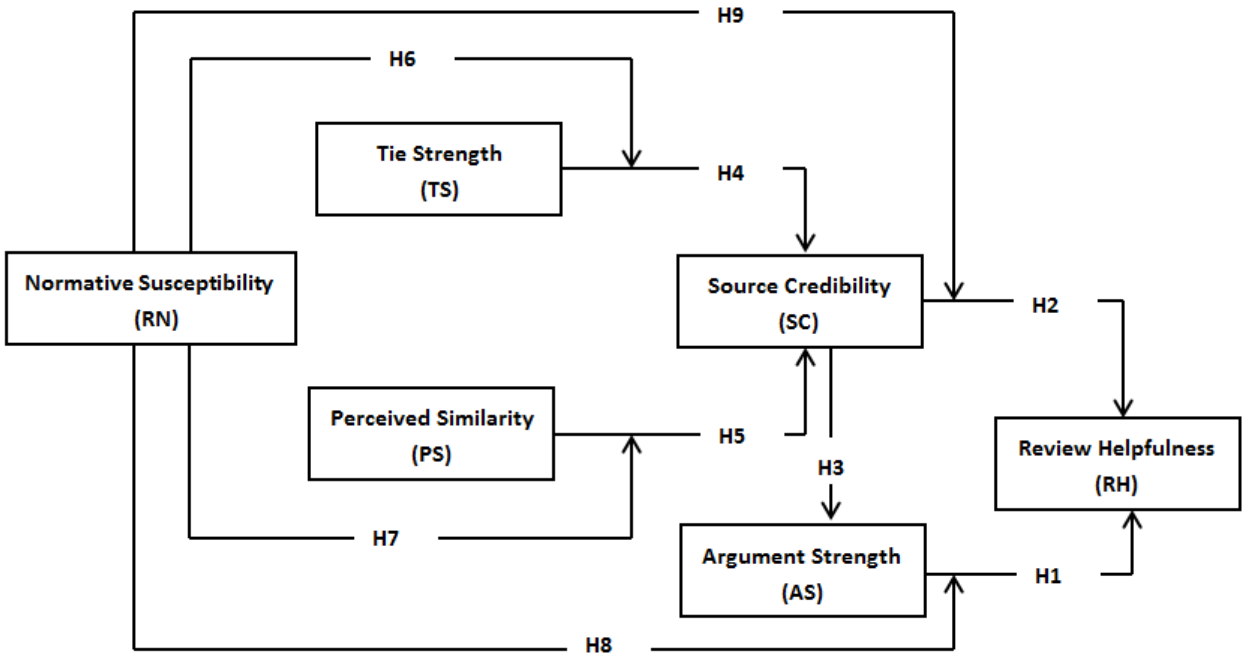

Figure1. RESEARCH MODEL

We propose our research model in Figure. 1. In the model, argument strength and source credibility of eWOM are regarded as two crucial predictor of consumer's evaluation of the review helpfulness. Further, source credibility of eWOM are influenced by two factors capturing the social relationship between the review provider and recipient namely tie strength and perceived similarity. We also introduce recipient's normative susceptibility to social influence as moderators in the model, moderating the impact of tie strength and perceived similarity on source credibility, as well as the impact of source credibility and argument strength on review helpfulness.

Systematic Factor and Heuristic Factor on Information Adoption

Argument strength is the extent to which the information recipients view the argument as convincing or valid in supporting its position [13] . A high level of argument strength indicates the information is justified and compelling. Zhang et al. [60] Pointed out that for the systematic processing, individuals develop their perceptions mainly regarding the information contents (e.g., argument strength). Recent researches have demonstrated that argument strength has proved to be an important element that people use to evaluate incoming communications [13] .

In this paper, we also define product review helpfulness as the extent to which consumers perceive the product review as being capable of facilitating judgment or purchase decisions. We adopt two important dimensions (i.e., perceived content diagnosticity and perceived vicarious expression), which are both included in the formative construct of product review helpfulness according to Bach's (1967). Perceived content diagnosticity refers to the extent to which a review discriminates between alternative interpretations of a problem and possible solutions to it [32] ; and vicarious expression demonstrates the degree to which reviews convey vivid experiences of a product that can be felt by readers [28] . Both of them are able to examine the ultimate effect of the eWOM information process on individuals.

Since online reviewers' perceived value of the information that help to reduce their uncertainties when considering a potential purchase, assist their decision-making, and even help to influence their purchase decisions. We propose that argument strength of eWOM is an important systematic factor of recipients' perceived review helpfulness. To be specific, when consumers carefully read a review and contemplate its validity, they are engaging in systematic information processing [63] . The more persuasive the information embedded in the review is, the higher strength consumers will perceive the content-based arguments to be, and the more likely that they will perceive the message is helpful. Thus, the following hypothesis is proposed:

H1. Argument strength positively affects eWOM review helpfulness.

Source credibility can be defined as recipients' perception about the credibility of the source of a review rather than the content of this message[5] . It captures the expertise and trustworthiness[11] . Recent studies [13] showed that for the heuristic processing of HSM, individuals develop perceptions which are related to some contextual cues, such as the characteristics of the information source (e.g., source credibility). Sussman and Siega (2003) suggested source credibility functions as a heuristic cue would function in the email context. Zhang and Watts (2008) also found source credibility exerts a significant impact on individuals' online information adoption behavior in the online environment .

Thus, in the eWOM environment, reviews which provide reliable information can help readers learn more about the online products and improve their decision-making abilities. From this perspective, source credibility is a relevant and applicable heuristic cue of HSM in eWOM contexts. So we posit that online consumers adopt source credibility as an important heuristic factor to form their information adoption. If a consumer finds that the comment is posted by high-credibility (i.e., high degree of expertise and trustworthiness) individuals for the given product, it is more likely to enable him/her to conclude that the review is helpful. This leads us to hypothesize:

H2. Source credibility positively affects eWOM review helpfulness.

According to the heuristic-systematic model, the co-occurrence of two information processing modes is one of the important theoretical extensions. Further studies pointed that heuristic processing can bias systematic processing by affecting information recipients' expectations or inferences about the validity of arguments [6][10] . For example, information received from a recognized expertise, rather than from an anonymous person, may be perceived as more valid. This also seems to be the case of eWOM. There are plenty of eWOM reviews from homogeneous online consumers, who are relative "ambiguous" and amenable to diverse interpretations[20] . Readers would like to find online reviews from credible sources are more convincing than those from non-credible sources, and then they can develop expectancies regarding the argument strength of these reviews.

Zhang and Watts (2008) recently found some support for the bias effect in a post-hoc analysis by using survey data and highlighted the indirect effect of heuristic cues. Eagly and Chaiken (1993) also found that source credibility and perceived quantity of reviews (heuristic factors) have direct impacts on purchase intention. These studies above proved that systematic factor (e.g., argument strength) had the strongest direct effect on behavioral intention, whereas heuristic factor (e.g., source credibility) had the strongest total effect.

In this study, we examine the bias effect in HSM by positing that source credibility of reviews (heuristic factor) can bias the evaluation on argument strength (systematic factor). Thus, we propose:

H3. Source credibility positively affects argument strength.

Social Relationship and Review Evaluation

Tie strength characterizes the closeness and frequency of interaction in a relationship between two parties [30] . On the context of online review sites, tie strength among online users would be stronger through their frequent interactions, including checking

others' review updates, editing comments to others' reviews, initiating discussions on a product evaluated in the reviews, or sending virtual gifts to others as a form of support or appreciation[59] . Previous researchers shows that tie strength has potential to significantly impact social media users [27] , which indicates that it could play a vital role in the process of users' decision-making and may even influence the understanding of their opinions.

As previous researches on social capital theory indicate, structural capital, which is in the form of social interaction, can positively affect cognitive capital and relational capital. In this study, we propose that structural capital can be reflected by the measurement of tie strength, which is also in the form of social interaction. Additionally, by building trust[58] , norms of reciprocity, and mutual respect [41] social interaction could contribute to the development of relational capital. Source credibility in this study is viewed as an indicator for relational capital, affected by social interaction.

Interacting with and collecting feedback from each other have been consistently emphasized as a vital process to develop a common understanding between users (Pawlowski and Daniel, 2004) and also the building of trust relationships with them [43] . Similarly, some researchers also apply this inner relationships among the three dimensions of social capital into IT service delivery context [36][42][55] . We argue that, in eWOM context, interaction between review provider and recipient can generate initial trust and common understanding towards products. Thus, we hypothesize that:

H4: Tie strength positively affects source credibility.

Perceived similarity refers to the extent to which individuals are similar regarding certain attributes [3] , such as values, tastes, and experiences[18] . In this study, we focus on the tastes about a certain product between review recipient and provider. According to similarity-attraction theory, online consumers may show liking or preference towards people with similar tastes. We believe that such liking can lead to individual's positive attitude when receiving information from similar ones.

Recent research on this theory classifies similarity into different categories according the levels of similarity such as demographic similarity and deep level similarity [40] . For example, Lankau et al. (2005) examined the role of deep level similarity and surface level similarity in formal mentoring relationships. Moreover, Nass and Lee (2000) indicated that participants would like and trust a voice from a personality similar to their own. In our research context, when the recipient of online reviews considered that the source of the reviews is similar with him/her, s/he may demonstrate high trust on the source. Therefore, we hypothesize that:

H5: Perceived similarity positively affects source credibility

Moderating Effect of Recipient's Normative Susceptibility

As we proposed before, tie strength may pose a positive effect on source credibility, that is, if a recipient have strong tie with the review provider, s/he may perceive the provider credible.

As said before, susceptibility to normative influence refers to the effect to the individual arising from the norms of other individuals in their preference of the group [15] . Thus, in this study, we propose that people with strong tie strength to some extent can be seen as a group or community, though virtual. Therefore if a review recipient has high susceptibility to normative influence, s/he would care about people in this group or community and perceive them as credible. In other words, people susceptive to normative social influence are easier to let tie strength affect their judgment of whether the source is credible. On the contrary, if an individual is not susceptive to normative influence, whether or not other people are in the group or community tends not to affect his/her perception of source credibility. The perception whether a source is credible or not is a relatively independent process and is immune to his/her social relationship with the target information source. Based on such difference, we hypothesize that:

H6: Recipient's susceptibility to normative influence positively moderates the effect of tie strength on source credibility.

According to similarity attraction theory, people tend to build initial trust with ones who are similar to them in some aspects. This tendency can actually be viewed as people's inclination to keep consistent with others' norms or expectations.

According to the definition of susceptibility to normative influence[15] , people susceptive to normative influence care about others' opinions and tend to behave according to the norm and others' expectation. In this study, the variable perceived similarity plays a role as common features representing a kind of expectation or norm they shared between the review recipient and provider. In this context, therefore, a person with high susceptibility to normative influence cares more about such shared norm or expectation and so could build initial trust easier, perceiving the source as credible. By contrast, when an individual has low susceptibility to normative influence, norm or expectation means little to them, leading that the initial trust can be hardly built result from the existence of perceived similarity. That is, this kind of people are less likely than people susceptive to normative influence to perceive a source credible even they have some common features with the source. It indicates that the effect perceived similarity exerting on source credibility may show different extent among people with different level of normative susceptibility. Thus, we hypothesize that:

H7: Recipient's susceptibility to normative influence moderates positively the effect of perceived similarity on source credibility.

According to HSM, systematic processing might require motivation, ability and sufficient cognitive resources, and some researchers believed that this processing will be limited if one chooses not to understand the message or is not mentally capable of understanding the message[63] . Considering the definition of susceptibility to normative influence, individuals who mark the level of it with low scores are not easily affected by others, and this means that they would struggle to comprehend the information by themselves. Thus, those people might prefer process the information through systematic processing. On the contrast, heuristic processing might depend on the availability of cues and also awareness of the heuristics associated with these cues. It means that if a cue is not available to the information recipient, or if the information recipient is not aware of the contents of the cue, he or she cannot process the content heuristically. Since people who mark the level of it with high scores tend to follow others, they are willing to gather cues provided by others in the eWOM environment, which definitely prompts the heuristic processing to some extent. It indicates that those people tend to process the reviews through the heuristic processing. According to the difference explained above, we hypothesis that:

H8: The susceptibility to normative influence negatively moderates the effect of argument strength on information adoption.
H9: The susceptibility to normative influence positively moderates the effect of source credibility on information adoption.

METHODOLOGY

Research Settings

We employ a famous Chinese online review sites named Dianping.com as the research context to examine the influence of eWOM. Since Dianping is one of most popular online review sites in China, there are many users providing and receiving reviews on entertainment services. By the first quarter of 2015, Dianping.com has more than 200 million active users and the reviews cover 14 million vendors across 2,500 Chinese cities. Additionally, Dianping.com has a reputation rating mechanism, offering the information to reflect ranking levels of different review contributors. From this perspective, we believe that Dianping.com is an appropriate research site for online consumers' information adoption.

Measures

In this study, all the constructs were measured by using multi-item scales adapted from validated measures in prior studies. Minor changes were made in the wording of the items to fit the specific research context of the Dianping.com. Since the instruments were originally developed in English, we firstly translated the questionnaire into Chinese, and back-translated from Chinese to English in order to administrate the survey study in China. If there were problems (e.g., disagreements or inconsistencies) during the translation process, we solved it by assuring that the final Chinese instruments had sufficient translation quality. Furthermore, we conducted a pilot survey and distributed it to a number of users of Dianping.com. We used feedback collected from usable responses to the pilot survey to refine our items and made the final survey. Measurement items are shown in appendix B. All items were measured using multi-items with five-point Likert scales, from 1= strongly disagree to 5= strongly agree.

Data Collection

We distributed URLs of the final questionnaire to people who have certain experience in the Dianping.com. We found suitable participants by several different ways. First, we found some college students and friends who have experience in the Dianping.com. Second, we contacted with the reviewers whose contact ways were showed in the Dianping. In addition, we also sent short messages to the followers of the Dianping's official micro-blog account. All the information or messages which have been sent to the participants included a URL of the questionnaire accompanied with a brief introduction of our study. Some incentives (e.g., prepaid phone card) were provided through a lucky draw to encourage participation.

We sent 1000 invitation letters, which included short messages, in total and finally gathered 230 useable responses. In the sample, 61.3% of the respondents were women and 38.7% were men. The average age was 22 years. Besides, a clear majority of the respondents (71.7%) had used the internet over six years, which indicates they have abundant experience for it.

DATA ANALYSIS

Partial Least Squares (PLS) Graph 2.0 was used to analyze the data and examine the hypotheses. As a second-generation multivariate technique, PLS could simultaneously assess the measurement model and the structural model. PLS requires a relatively small sample size, has no restriction on normal distribution, so it is more suitable for exploratory analysis [14] . Thus, PLS is more appropriate for this study. Following the two-step analytical procedures, we examine the measurement model and the structural model respectively.

Measurement Model

The measurement model was assessed by the full sample and each subgroup separately. Reliability, convergent validity, and discriminant validity were three indicators of the goodness of the measurement model. Reliability can be assessed by using composite reliability, and average variance extracted (AVE) [26] . Specially, Fornell and Larcker (1981) proposed 0.7 and 0.5 as the threshold value of composite reliability and AVE, respectively. As shown in Table 1, all the constructs were of good reliabilities. Convergent validity was assessed by checking the loadings to see if items within the same construct have high loading values. Loadings of all the items on their respective latent construct were all higher than 0.7 in this study, indicating good

convergent validities. Besides, Discriminant validity could be assessed by comparing the square root of AVE of a construct and correlations of that construct with the other constructs: if the square root of AVE is higher than any correlations related to this construct, acceptable discriminant validity is indicated[26] . The results show that all the constructs have good discriminant validity.

Table 1. RELIABILITY AND DISCRIMINANT VALIDITY

	Composite reliability	**AVE**	**AS**	**PS**	**RH**	**SC**	**TS**
Combined Group							
AS	.912	.721	**.849**				
PS	.886	.722	.478	**.850**			
RH	.924	.669	.320	.309	**.818**		
SC	.860	.608	.477	.367	.315	**.780**	
TS	.933	.824	.361	.390	.072	.279	**.908**
Low-RN Group							
AS	.893	.676	**.822**				
PS	.903	.756	.464	**.869**			
RH	.921	.921	.321	.330	**.960**		
SC	.853	.852	.389	.303	.239	**.923**	
TS	.918	.790	.206	.422	.057	.177	**.889**
High-RN Group							
AS	.924	.752	**.867**				
PS	.830	.626	.443	**.791**			
RH	.927	.680	.295	.239	**.825**		
SC	.853	.599	.517	.373	.376	**.748**	
TS	.936	830	.438	.249	.029	.285	**.911**

Note: The numbers in bold in diagonal row of the correlation matrix are the square root of AVE. AS, argument strength ; PS, Perceived similarity ; RH, review helpfulness ; SC, source credibility. TS, tie strength Low-RN group where reviewers mark the susceptibility to normative influence <= 2.875; High-RN group where reviewers mark the susceptibility to normative influence > 2.875

Structure Model

With adequate measurement models, the hypotheses were tested by examining the structural models. And in order to see different influence among people with different levels in susceptibility to normative influence, we depict the structural models for combined group, the Low-RN group, and High-RN group respectively. The explanatory power of a structural model could be evaluated by looking at the R^2 value (variance accounted for) in the final dependent construct. In this study, the final dependent construct (review helpfulness) had R^2 values of 0.136 for the combined dataset, 0.118 for Low-RN group and 0.156 for High-RN group, making interpretation of path coefficients meaningful. Besides, with a one-tailed five percentage level of significance, the acceptable T-value in this study would be 1.650.

Following Keil et al (2000), the moderating effect of tie strength was tested by comparing path coefficients of the same relationship for low-RN group and high-RN group based on the PLS analysis (details of the analysis, see Appendix A). The results indicated that perceived similarity had significant effect on source credibility in all three groups, with combined group (β=.306, t=4.760), Low-RN group (β=.278, t=3.113), and in High-RN group (β=.322, t=3.267). Besides, the results also indicated that tie strength had significant effect on source credibility in the combined group (β=.160, t=2.470) and High-RN group (β=.204, t=2.083), but insignificant in Low-RN group (β=.060, t=0.791). Also ,source credibility had effect on review helpfulness in the combined group (β=.209, t=2.925) and High-RN group (β=.305, t=2.950), but insignificant in Low-RN group (β=.134, t=1.330) In contrast, argument strength was significant for both combined group (β=.220, t=2.615) and Low-RN group (β=.269, t=2.560) but insignificant for High-RN group (β=.137, t=0.968). The results also indicated that source credibility had significant effect on argument strength in all three groups, with combined group (β=.478, t=8.072), Low-RN group (β=.389, t=4.369), and in High-RN group (β=.517, t=7.112). Further, Table 2 listed the path coefficients comparison results according to path coefficient comparison method. See appendix A for details about the method applied to. Results showed that the path loadings of perceived similarity- source credibility (t= -3.589, p<0.001) and tie strength- source credulity (t=-12.199, p<0.001) were significantly different for low-RN group and high-RN group. Results also indicated that the path loadings of argument strength- review helpfulness (t= -8.175, p<0.001) and source credibility – review helpfulness (t=-12.365, p<0.001) were significantly different for low-RN group and high-RN group. Above all, all the hypotheses were supported.

Table 2. MODEL SUMMATY: STATISTICAL COMPARISON OF PATHCOEFFICIENTS

Construct (->SC)	**Combined group**		**Low-RN group**		**High-RN group**		**Low-RN group vs High-RN group**	
	β	**t-value**	**β**	**t-value**	**β**	**t-value**	**Δβ**	**t-value**
Perceived Similarity	.305***	4.760	.278***	3.113	.322***	3.267	**-.044*** **	-3.587
Tie Strength	.160***	2.470	.060	0.719	.204**	2.083	**-.144*** **	-12.199
Construct (->RH)								
Argument Strength	.220***	2.615	**.269*** **	2.560	**.137**	0.968	**.137*** **	8.175
Source Credibility	.209***	2.825	**.134**	1.330	**.305*** **	2.950	**-.171*** **	-12.365

Note： *p<0.05, **p<0.01, ***p<0.001

DISCUSSION AND IMPLICATIONS

Key Findings

This study attempts to explore antecedents of source credibility and the boundary conditions under which the antecedents exert their impacts on source credibility. With HSM, we adopt similarity-attraction theory, social capital theory and social influence model to our research and several key findings can be derived from the study.

First, this study shows that the perceived similarity between individuals can influence the level they perceive the review source as credible, which indicates that when people suppose they are similar with the reviewers, they tend to believe the reviewer as trustworthy. Additionally, this influence is intensified when individuals have high susceptibility to normative social influence. That is to say, one tends to find that perceived similarity plays a more important role on his/ her justification on the source credibility, if she or he cares more about how other people see him/ her, or pay more attention to the norm.

Second, we also find that source credibility could be affected by tie strength between review provider and recipient. The underlying logic is that with much stronger tie strength (e.g., more frequent interaction), the individuals would perceive the shared representations and interpretations between them is stronger, and trust is more likely to engender. And this impact is also intensified by high normative susceptibility: the more individuals are susceptive to other's behavior, the more significant the impact exerted on source credibility by tie strength is.

Finally, this study reveals that the recipient's susceptibility to social influence plays a role as the moderator in information evaluation behavior. The high susceptibility to normative influence strengthens the impact of source credibility on review helpfulness as well as on argument strength, but weakens the effect of argument strength on review helpfulness. It indicates that if an individual is susceptive to normative influence, heuristic factor (i.e., source credibility), instead systematic factor (i.e., argument strength) plays more significant role on review evaluation, and vice versa.

Theoretical Implications

This study can offer several important and interesting insights to information systems research.

First, this study extends the HSM by introducing social relationships to information evaluation behavior. Even though a large number of researchers have conducted key findings about this model, most of them pay attention to how influential it is in the field of persuasion and attitude change [53][62] , few of them considered which factors would affect the variables in HSM. This study shows that tie strength and perceived similarity affect source credibility, supported by social capital theory and similarity-attraction theory. To our knowledge, few prior researches applied the two theories, especially the similarity-attraction theory, to explain information adoption behavior or to combine them with HSM. The current study can therefore be regarded as an exploration to fill this research gap by providing a footstone for further theoretical development.

Moreover, this study enriches the HSM literature by adding susceptibility to social influence as moderators in information evaluation. It is found that susceptibility to normative influence can strengthen the impact of tie strength and perceived similarity on source credibility. That is when the level of susceptibility to normative influence is low, an individual might prefer to process the information through systematic processing (i.e., argument strength); while when it is high, he/she prefers the heuristic processing (i.e., source credibility).

Finally, this study examines the two routes: systematic and heuristic, in HSM play significant role under what condition respectively. The study shows that if an individual is susceptive to normative influence, heuristic factor (i.e., source credibility), instead of systematic factor (i.e., argument strength) plays the significant role on review evaluation, and vice versa.

Practical implications

Apart from the theoretical implications, this study also contributes a lot for practitioners. The most obvious practical implication is that eWOM service providers should improve the social networking functions so as to enhance users' social relationships. For example, registered reviewers can be encouraged to express their own experiences about products, share what they're interested in, tag products they have purchased, and keep discussing with other online users. As discussed before, social relationship plays a significant role in individuals' final decision.

Second, a rating mechanism should be established in online eWOM sites. According to both direct and indirect effects of heuristic cues, source credibility has significant positive effect on users' perceived information helpfulness and thus the process of purchase decision-making. So designers should encourage reviewers to provide useful reviews by setting up a rating system which can reflect contributors' credibility. This kind of indicators can enable people to gain helpful information which facilitate the purchase process.

Limitations

There are several limitations of this study. First, the study only adopts a single online review site (i.e., Dianping.com) as the research context in a single culture (i.e. China) and this might limit the generalizability of the research. Thus when applying the research model or conclusions to other contexts, researchers may consider contextual issues (e.g., culture and the characteristics of different websites).

Second, this study focused on the antecedents and moderators of source credibility and considered only one factor that would moderate the process, some other factors are not included. Future research can add more factors into the research model to see whether or not our proposed relationships are still supported. Finally, although we sent invitations to a great deal of online users randomly, users interested in eWOM should be more likely to fill the survey. Thus, a better sampling method should be considered in future research to avoid the response bias.

REFERENCES

[1] Bach, G. R. (1967) 'Marathon group dynamics: II. dimensions of helpfulness: Therapeutic aggression', *Psychological Reports*, Vol. 3, No. 2, pp. 12.

[2] Bearden, W. O., Netemeyer, R. G. & Teel, J. E. (1989) 'Measurement of consumer susceptibility to interpersonal influence', *Journal of Consumer Research*, Vol. 15, pp. 473-481.

[3] Brown, J. J. & Reingen, P. H. (1987) 'Social ties and word-of-mouth referral behavior*', *Journal of Consumer Research*, Vol. 14, pp. 350-362.

[4] Byrne, D. (1971) *The attraction paradigm*, New York: Academic Press.

[5] Chaiken, S. (1980) 'Heuristic versus systematic information processing and the use of source versus message cues in persuasion', *Journal of Personality and Social Psychology*, Vol. 39, pp. 752-766

[6] Chaiken, S. & Ledgerwood, A. (2012) 'A theory of heuristic and systematic information processing', *Handbook of theories of social psychology*, CA: Sage Publications Ltd.

[7] Chaiken, S., Liberman, A. & Eagly, A. H. (1989) *Heuristic and systematic information processing within and beyond the persuasion context*, Unintended thought US: Guilford Press.

[8] Chaiken, S. & Maheswran, D. (1994) 'Heuristic processing can bias systematic processing: Effects of source credibility, argument ambiguity, and task importance on attitude judgment', *Journal of Personality and Social Psychology*, Vol. 66, pp. 460-473.

[9] Chen, N.-T. N. (2014) 'Developing and testing a heuristic-systematic model of health decision making: The role of affect, trust, confidence and media influence', *Dissertation Abstracts International*, 2-A(E).

[10] Chen, S. & Chaiken, S. (1999) 'The heuristic-systematic model in its broader context', *Dual-process theories in social psychology*. US: Guilford Press.

[11] Cheung, C. M. K., Lee, M. K. O. & Rabjohn, N. (2008) 'The impact of electronic word-of-mouth: The adoption of online opinions in online customer communities', *Internet Research*, Vol. 18, pp. 229-247.

[12] Cheung, M., Luo, C., SIA, C. & Chen, H. (2009a) 'Credibility of electronic word-of-mouth: Informational and normative determinants of on-line consumer recommendations', *International Journal of Electronic Commerce*, Vol. 4, pp. 9-38.

[13] Cheung, M. Y., Luo, C., SIA, C. L. & Chen, H. (2009b) 'Credibility of electronic word-of-mouth: Informational and normative determinants of on-line consumer recommendations', *International Journal of Electronic Commerce*, Vol. 13, pp. 9-38.

[14] Chin, W. W., Marcolin, B. L. & Newsted, P. R. (2003) 'A partial least squares latent variable modeling approach for measuring interaction effects: Results from a Monte Carlo simulation study and an electronic-mail emotion/adoption study', *Information Systems Research*, Vol. 14, pp. 189-217.

[15] Cialdini, R. B., Wosinska, W., Barrett, D. W., Butner, J. & Gornik-Durose, M. (1999) 'Compliance with a request in two cultures: The differential influence of social proof and commitment/consistency on collectivists and individualists', *Personality and Social Psychology Bulletin*, Vol. 10, pp. 1242-1253.

[16] Cicourel & Victor, A. (1974) *Cognitive sociology : Language and meaning in social interaction*, New York, US: Free Press.

[17] Coleman & S., J. (1988) *Social capital in the creation of human capital*, The University of Chicago Press.
[18] De Bruyn, A. & Lilien, G. L. (2008) 'A multi-stage model of word-of-mouth influence through viral marketing', *International Journal of Research in Marketing*, Vol. 25, pp. 151-163.
[19] Deutsch, M. & Gerard, H. B. (1955) 'A study of normative and informational social influences upon individual judgment', *Journal of Abnormal and Social Psychology*, Vol. 51, pp. 629-636.
[20] Eagly, A. H. & Chaiken, S. (1993) *The psychology of attitudes*, Orlando, FL, US: Harcourt Brace Jovanovich College Publishers.
[21] Fehr, B., Winnipeg, U. & Winnipeg, M. (2000) 'The life cycle of friendship', *Close relationships, A sourcebook.*, US: Sage Publications, Inc.
[22] Ferran, C. & Watts, S. (2008) 'Videoconferencing in the field: A heuristic processing model', *Management Science*, Vol. 54, pp. 1565 - 1578.
[23] Filieri, R. & Mcleay, F. (2014) 'E-WOM and accommodation: an analysis of the factors that influence travelers' adoption of information from online reviews', *Journal of Travel Research*, Vol. 53, pp. 44-57.
[24] Finn, M. (2012) 'Monogamous order and the avoidance of chaotic excess', *Psychology & Sexuality*, Vol. 3, pp.123-136.
[25] Fishbein, M. (1975) *Belief, attitude, intention and behavior : An introduction to theory and research*, Reading, MA: Addison-Wesley.
[26] Fornell, C. & Larcker, D. F. (1981) 'Evaluating structural equation models with unobservable variables and measurement error', *Journal of Marketing Research*, Vol. 18, pp. 39-50.
[27] Gilbert, E. & Karahails, K. (2009) 'Predicting tie strength with social media', *Proceedings of the 27th International Conference: Human Factors in Computing Systems*, (2009), pp. 211-220.
[28] Gist, M. E. (1987) 'Self-efficacy: Implications for organizational behavior and human resource management', *Academy of management review*, Vol. 12, pp.472-485.
[29] Gruen, T. W., Osmonbekov, T. & Czaplewski, A. J. (2006) 'eWOM: The impact of customer-to-customer online know-how exchange on customer value and loyalty', *Journal of Business Research*, Vol. 59, pp.449-456.
[30] Gupta, P. & Harris, J. (2010) 'How e-WOM recommendations influence product consideration and quality of choice: A motivation to process information perspective', *Journal of Business Research*, Vol. 63, pp.1041-1049.
[31] HE, W., QIAO, Q. & Wei, K.-K. (2009) 'Social relationship and its role in knowledge management systems usage', *Information & Management*, Vol. 46, pp.175-180.
[32] Henningsen, D. D. & Henningsen, M. L. M. (2015) 'A preliminary examination of perceptions of social influence in group decision making in the workplace', *International Journal of Business Communication*, Vol. 52, pp.188-204.
[33] Herr, P. M., Kardes, F. R. & Kim, J. (1991) 'Effects of word-of-mouth and product-attribute information on persuasion: An accessibility-diagnosticity perspective', *Journal of Consumer Research*, Vol. 4, pp. 9.
[34] Kaplan & F., M. (1989) 'Task, situational, and personal determinants of influence processes in group decision making', *Advances in group processes*, Vol. 6, pp. 87-105.
[35] Kaptein, M., Castaneda, D., Fernandez, N. & Nass, C. (2014) 'Extending the similarity-attraction effect: The effects of when-similarity in computer-mediated communication', *Journal of Computer-Mediated Communication*, Vol. 19, pp. 342-357.
[36] Keil, M., Tan, B. C. Y., Wei, K.-K., Saarinen, T., Tuunainen, V. & Wassenaar, A. (2000) 'A cross - culutral study on escalation of commitment behavior in sofaware projects', *MIS Quarterly*, Vol. 24, pp.299-325.
[37] Ko, D.-G., Kirsch, L. J. & King, W. R. (2005) 'Antecedents of knowledge transfer from consultants to clients in enterprise system implementations', *MIS Quarterly*, Vol. 29, pp. 9-85.
[38] Lankau, M. J., Riordan, C. M. & Thomas, C. H. (2005) 'The effects of similarity and liking in formal relationships between mentors and proteges', *Journal of Vocational Behavior*, Vol. 67, pp. 252-265.
[39] Levine, J. M. & Tindale, R. S. (2015) *Social influence in groups*, US: American Psychological Association.
[40] Li, M., Huang, L., Tan, C. & Wei, K. (2013) 'Helpfulness of online product reviews as seen by consumers: Source and content features', *International Journal of Electronic Commerce*, Vol. 4, pp. 101-136.
[41] Mannix, E. & Neale, M. A. (2005) 'What differences make a difference?' *Psychological Science in the Public Interest*, Vol. 6, pp. 31-55.
[42] Mclure Wasko, M. & Faraj, S. (2005) 'Why should I share? Examining social capital and knowledge contribution in electronic networks of practice', *MIS Quarterly*, Vol. 29, pp. 35-57.
[43] Mitchell, V. L. (2006) 'Knowledge integration and information technology project performance', *MIS Quarterly*, Vol. 30, pp. 919-939.
[44] Montoya, M. M., Massey, A. P. & Khatri, V. (2010) 'Connecting IT services operations to services marketing practices', *Journal of Management Information Systems*, Vol. 26, pp. 65-85.
[45] Morry, M. M. & Winnipeg, M. (2005) . 'Relationship satisfaction as a predictor of similarity ratings: A test of the attraction-similarity hypothesis', *Journal of Social and Personal Relationships*, Vol. 22, pp. 561-584.
[46] Nahapiet, J. & Ghoshal, S. (1998) 'Social capital, intellectual capital, and the organizational advantage', *Academy of Management Review*, Vol. 23, pp. 242-266.
[47] Nass, C. & Lee, K. M. (2000) Does computer-generated speech manifest personality? An experimental test of similarity-attraction', *Conference on human factors in computing systems.*
[48] Park, C. W. & Lessig, V. P. (1977) 'Students and housewives: Differences in susceptibility to reference group influence', *Journal of Consumer Research*, Vol. 4, pp. 102-110.
[49] Pawlowski, S. D. & Daniel, R. (2004) 'Bridging user organizations: Knowledge brokering and the work of information technology professionals', *MIS Quarterly*, Vol. 28, pp. 645-672.

[50] Petty, R. & Cacioppo, J. (1986) 'The elaboration likelihood model of persuasion', *Communication and Persuasion,*Springer New York.
[51] Senecal, S. & Nantel, J. (2004) 'The influence of online product recommendations on consumers' online choices', *Journal of Retailing,* Vol. 80, pp. 159-169.
[52] Singh, R., Chen, F. & T., D. (2014) 'The similarity-attraction link: Sequential versus parallel multiple-mediator models involving inferred attraction, respect, and positive affect', *Basic and Applied Social Psychology,* Vol. 36, pp. 281-298.
[53] Smith, E. R. & Decoster, J. (2000) 'Dual-process models in social and cognitive psychology: Conceptual integration and links to underlying memory systems', *Personality and Social Psychology Review,* Vol. 4, pp. 08-131.
[54] Sprecher, S., Treger, S., Fisher, A., Hilaire, N. & Grzybowski, M. (2015) 'Associations between self-expansion and actual and perceived (dis)similarity and their joint effects on attraction in initial interactions', *Self and Identity,* Vol. 14, pp. 369-389.
[55] Sun, Y., Fang, Y., Lim, K. H. & Straub, D. (2012) 'User satisfaction with information technology service delivery: A social capital perspective', *Information Systems Research,* Vol. 23, pp. 1195 -1211.
[56] Susss,am, S. W. & Siegal, W. S. (2003) 'Informational influence in organizations: An integrated approach to knowledge adoption', *Information Systems Research,* Vol. 14, pp. 47-65.
[57] Thorsten Hennig-Thurau, F., P., G. K., Gianfranco, W. & D., G. D. (2004) 'Electronic word-of-mouth via consumer-opinion platforms: What motivates consumers to articulate themselves on the internet?', *Journal of Interactive Marketing (John Wiley & Sons),* Vol. 18, pp. 38-52.
[58] Tsai, W. & Ghoshal, S. (1998) 'Social capital and value creation: The role of intrafirm networks', *Academy of Management Journal,* Vol. 41, pp. 464-476.
[59] Zhang, K. Z., Zhao, S. J. & Lee, M. K. (2013) 'Product attitude formation on online review sites with social networks', *Pacific Aisa Conference of Information System.*
[60] Zhang, K. Z. K., Zhao, S. J., Cheung, C. M. K. & Lee, M. K. O. (2014) 'Examining the influence of online reviews on consumers' decision-making: A heuristic-systematic model', *Decision Support Systems,* Vol. 67, pp. 78-89.
[61] Zhang, R. & Tran, T. (2010) 'Helpful or unhelpful: A linear approach for ranking product', *Journal of Electronic Commerce Research,* Vol. 15, pp. 220-230.
[62] Zhang, W. (2003) Knowledge adoption in online communities of practice, *Proceedings of the 24th International Conference on Information Systems,* Seattle: Association for Information Systems: Boston University.
[63] Zhang, W. & Watts, S. A. (2008) 'Capitalizing on content: Information adoption in two online communities', *Journal of the Association for Information Systems,* Vol. 9, pp. 72-93.
[64] Zhu, F. & Zhang, X. (2010) ' Impact of online consumer reviews on sales: The moderating role of product and consumer characteristics', *Journal of Marketing,* Vol. 74, pp. 133-148.
[65] Zhu, L., Yin, G. & He, W. (2014) 'Is this opinion leader's review useful? Peripheral cues for online review helpfulness', *Journal of Electronic Commerce Research,* Vol. 15, pp. 267.