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Persuasive messages, popularity cohesion, and message diffusion in social media marketing

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ABSTRACT

Social media marketing is an influential marketing method. Liking or sharing social media messages can increase the effects of popular cohesion and message diffusion. This research investigates how persuasive messages (i.e., argument quality, post popularity, and post attractiveness) can lead internet users to click like and share messages in social media marketing activities. This research develops hypotheses on the basis of elaboration likelihood model and a 392 fans survey from a fan page on Facebook. Structural equation modeling analyzes questionnaire data. Results show that the three types of persuasive messages are important to click like and to share post messages. Post popularity is essential and works through both central route and peripheral according to research model. In addition, different message characteristics and user groups have different communicating behaviors. This research provides valuable recommendations for social media marketing activities.

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1. Introduction

As online users and browse time increase, networks become powerful marketing channels. Only touching and persuasive messages can change users' attitudes and induce enthusiastic interactions (Bhattacharjee & Premkumar, 2004; Coulter & Punj, 2004). Social media marketing, which uses social networks such as Facebook to enable content sharing, information diffusion, relationship building, and fans cohesion (Cheung & Lee, 2010; Kim & Ko, 2012), is an influential marketing method nowadays.

The automatic connections of social media marketing easily spread messages. Social media scale creates synergistic effects, making it a powerful communication tool. Thus, marketing managers must persuade internet users to spontaneously share messages with relatives, colleagues, or friends. Therefore, effective dissemination of information

becomes an essential factor in social media marketing success and persuading internet users to facilitate promotions is paramount for recent marketing research.

On the basis of elaboration likelihood model (ELM), which posits two routes of persuasion process (Petty & Cacioppo, 1986), this research explores how social media marketing persuades internet users to forward messages to reach popular cohesion and message diffusion. This study investigates message characteristics and how internet users' evaluations affect communicative intention. Moreover, this research analyzes different user groups to understand their communication purposes.

2. Literature review

2.1. Using persuasive messages to change internet user behavior

Persuasion is an active attempt that changes receivers' actions and beliefs via reasonable and sensible expressions (Lee & Xia, 2011). Persuasive messages focus on benefits to and communication with receivers (Lee, Keller, & Sternthal, 2010).

Electronic word of mouth (eWOM) is an important marketing strategy that affects internet user behaviors (Park & Kim, 2008; Park & Lee, 2009). Suspicious of traditional advertisements, users prefer trustworthy friends, or even information coming from strangers online. Social media sites like Facebook (like, comment, sharing) or Youtube (like, dislike) enable the expression of opinions and emotions (De Vries, Gensler, & Leeftang, 2012; Yang, 2012).

ELM is a theory of persuasion researchers often use regarding behavioral changes among message receivers. ELM defines central

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2.2. Communication technology, cohesion, and diffusion effects

3. Research model and hypotheses

3.1. Persuasive messages

H1. Argument quality of posts has a positive effect on usefulness.

influences affect user behavior (Cheung & Lee, 2010). User comments affect usefulness beliefs and preferences (Park & Kim, 2008). This study proposes the following hypotheses:

H2a. Post popularity positively affects usefulness.

H2b. Post popularity positively affects preference.

Posts attractiveness refers to the extent to which recipients perceive posts as admirable and appealing (Ahearne, Gruen, & Jarvis, 1999). Hence, post attractiveness may affect individual preferences (Verhagen, Feldberg, van den Hooff, Meents, & Merikivi, 2012).

H3. Post attractiveness positively affects preference.

3.2. Beliefs and attitude

Recipients mainly read posts because of two factors: Usefulness and preferences. Usefulness refers to user perceptions deriving from personal or professional judgment about content that may benefit their performance in browsing posts (Bhattacharjee & Sanford, 2006), while preferences comprise favorable feelings and interests (Kim & Son, 2009). Recipients' beliefs about posts usefulness affect preferences (Bhattacharjee & Premkumar, 2004).

H4. Usefulness positively affects preference.

Innovation diffusion theory (IDT) explains that usefulness determines the eWOM diffusion intention of post recipients (Rogers, 1995). Hence, usefulness has a positive connection with eWOM intention (Cheung & Thadani, 2012).

H5a. Usefulness positively affects like intention.

H5b. Usefulness positively affects share intention.

Recipients express like or share behaviors when they have interest in posts consistent with personal expectations. Therefore, preference positively affects eWOM intention (Hsu & Lin, 2008; Murray & Haeubl, 2011).

H6a. Preference positively affects like intention.

H6b. Preference positively affects share intention.

3.3. Behavioral intention

The diagram illustrates the research model, organized into three main sections: Persuasive Messages, Beliefs and Attitude, and Behavioral Intention.

- Persuasive Messages:** Includes three nodes: Argument Quality, Posts Popularity, and Posts Attractiveness.
- Beliefs and Attitude:** Includes two nodes: Usefulness and Preference.
- Behavioral Intention:** Includes two nodes: Like Intention and Share Intention.

Key relationships and hypotheses are shown as follows:

- Persuasive Messages to Beliefs and Attitude:**
 - Argument Quality → Usefulness (H1)
 - Posts Popularity → Usefulness (H2a) and Preference (H2b)
 - Posts Attractiveness → Preference (H3)
 - Usefulness → Preference (H4)
- Beliefs and Attitude to Behavioral Intention:**
 - Usefulness → Like Intention (H5a) and Share Intention (H5b)
 - Preference → Like Intention (H6a) and Share Intention (H6b)
- Direct Effects on Behavioral Intention:**
 - Like Intention → Share Intention (H7)
- Control Variables:**
 - Relative Significance and User Expertise are shown at the top, influencing the relationships between Usefulness, Preference, and Behavioral Intention.
 - Relative Significance influences: Usefulness → Like Intention (H8a), Usefulness → Share Intention (H8b), Preference → Like Intention (H8c), and Preference → Share Intention (H8d).
 - User Expertise influences: Usefulness → Like Intention (H9a), Usefulness → Share Intention (H9b), Preference → Like Intention (H9c), and Preference → Share Intention (H9d).

Fig. 1. Research model and hypotheses.

Vriesa et al., 2012). Since likes have a positive meaning, several likes entail a powerful connection with post topics. eWOM cohesion effect also affects diffusion of viral marketing (Ho & Dempsey, 2010). Topics that receive many likes draw greater attention and are more likely to obtain more shares (Hinz, Skiera, Barrot, & Becker, 2011). Hence, likes gathering power positively affects sharing behaviors (Cheung & Thadani, 2012).

H7. Like intention positively affects share intention.

3.4. Relative significance and user expertise

Motivation and ability affect the likelihood of messages elaboration (Coulter & Punj, 2004). Relative significance and user expertise also affect behavioral intention (Kim, Kim, & Park, 2010). In this research, which investigates users of a cooking website, relative significance involves recipients who perceive that cooking is more important than other daily chores are, while user expertise refers to the cooking ability of post recipients (Bhattacharjee & Sanford, 2006).

Post recipients with higher relative significance can observe the recipe or users' comments to decide which recipes are useful. Recipients then may press like or share the posts that they consider useful. Conversely, post recipients with lower relative significance do not possess sufficient cooking experience, so they like or share the posts according to personal feelings.

H8a. Relative significance positively moderates the effect of usefulness on like intention.

H8b. Relative significance positively moderates the effect of usefulness on share intention.

H8c. Relative significance negatively moderates the effect of preference on like intention.

H8d. Relative significance negatively moderates the effect of preference on share intention.

In addition, recipe authors or post recipients with higher user expertise usually analyze recipes usefulness before liking or sharing. Conversely, post recipients with lower user expertise seldom care about recipe contents or comments. Instead, they like and share posts only if the post is interesting or pleasing.

H9a. User expertise positively moderates the effect of usefulness on like intention.

H9b. User expertise negatively moderates the effect of preference on like intention.

H9c. User expertise positively moderates the effect of usefulness on share intention.

H9d. User expertise negatively moderates the effect of preference on share intention.

4. Data analysis and results

4.1. Data collection and research methodology

Taiwan's biggest cooking community site is iCook (<http://icook.tw>). This community collects 40,000 recipes and attracts 800,000 Facebook fans only in June 2014. Users can search for favorite recipes or share their recipes and meet friends who also like to cook. Since September 2011, iCook has a Facebook page (<http://www.facebook.com/icooktw>) and attracts fans via blog recipes and health information.

To understand the effect of articles Facebook posts, this research targets iCook's fans on Facebook and analyzes how articles affect like and

share intention. Information collection requires an internet questionnaire template, without time limit. This questionnaire allows respondents to carefully consider questions and enables researchers to locate potential interviewees more easily.

Concerning level of education, university and master graduates cover 84% from total respondents. From total respondents, 76% are female, 70% are over age 30, and 66% use Facebook 6–7 days weekly.

Questionnaires use previous valuable material, slightly modifying items to suit the context of the cooking fan pages. Questionnaire classifies items on a five-point Likert scale, ranging from "strongly disagree" to "strongly agree."

4.2. Measurement model

AMOS version 18 performs a two-step analysis. First, AMOS examines measurement model. Then, AMOS examines structural model.

This study uses confirmatory factor analysis (CFA) to evaluate measurement model. CFA is more appropriate than alternative statistical techniques are for exploratory factor analysis (Bagozzi & Phillips, 1982). Additionally, most model-fit indices should reach standards for verification of model fitness. Results of the model fit are $\chi^2/df = 1.84$, GFI = 0.91, AGFI = 0.88, NFI = 0.95, CFI = 0.98, and RMSEA = 0.05. All model-fit indices exceed the value that previous studies recommend.

Construct validity analysis splits into two: convergent validity and discriminant validity analyses. This study tests convergent validity using three criteria: (1) all item loadings should exceed 0.70, (2) composite reliability (CR) should exceed 0.70, and (3) average variance extracted (AVE) for each construct should exceed 0.50 (Fornell & Larcker, 1981). Results of the analysis are in Table 1. Each research construct conforms to the above three criteria. All necessary indices are acceptable.

This study evaluates discriminant validity according to low correlations between the measure of interest and other constructs. Table 2 shows that the square roots of the AVE for each construct should be greater than the correlation between constructs is (Fornell & Larcker, 1981). These results support discriminant validity. In sum, measurement model in this research shows good convergent validity and discriminant validity.

4.3. Structural model

Overall model-fit indices adapt to the benchmarks of Hair, Anderson, Tatham, and Black (1998), with $\chi^2/df = 2.21$, GFI = 0.91, AGFI = 0.89, NFI = 0.96, CFI = 0.98, and RMSEA = 0.06.

Fig. 2 shows the results of the structural model test, including the variance (R^2) of the dependent variable, and estimated path coefficients. Research model shows strong predictive power. The R^2 for each latent-dependent variable exceeds 0.50, suggesting that overall model's fit is good. Fig. 2 shows that all paths in this model are significant. Consistent with ELM, this study compares the model before understanding the correlation between variables.

First, both argument quality ($\beta = 0.30$; $p < 0.001$) and post popularity ($\beta = 0.59$; $p < 0.001$) significantly affect usefulness, resulting in a combination of 0.89 ($= 0.30 + 0.59$). Post attractiveness ($\beta = 0.34$; $p < 0.001$) and post popularity ($\beta = 0.29$; $p < 0.001$) significantly affect preference, resulting in a combination of 0.63 ($= 0.34 + 0.29$). These results indicate that persuasive messages have higher levels of post popularity. However, argument quality and post popularity significantly affect usefulness, and post popularity and post attractiveness significantly affect preference.

Second, usefulness significantly affects like intention ($\beta = 0.44$; $p < 0.001$) and share intention ($\beta = 0.21$; $p < 0.001$), while usefulness significantly affects preference ($\beta = 0.32$; $p < 0.001$). Through like intention, usefulness positively and indirectly affects share intention, where the indirect effect is 0.22 ($= 0.44 \times 0.49$). Preference positively affects like intention ($\beta = 0.34$; $p < 0.001$) and share intention ($\beta = 0.12$;

Table 1
Statistics of construct items.

Constructs/items	FL	CR	AVE	Mean	SD
Argument quality (Bhattacharjee & Sanford, 2006)		0.96	0.88	3.75	0.85
AQ1: The recipe in the post is informative to my daily cooking.	0.94				
AQ2: The recipe in the post is helpful to my daily cooking.	0.94				
AQ3: The recipe in the post is valuable to my daily cooking.	0.94				
Post popularity (He, Qiao, & Wei, 2009)		0.93	0.81	4.26	0.66
PP1: I think recipes with more people pressing like, sharing, and responding positively are trustworthy.	0.88				
PP2: I think recipes with more people pressing like, sharing, and responding positively are reliable.	0.89				
PP3: I think recipes with more people pressing like, sharing, and responding positively are believable.	0.93				
Post Attractiveness (Verhagen et al., 2012)		0.94	0.84	4.48	0.67
PA1: Recipe photos displayed in post is attractive.	0.87				
PA2: Recipe photos are aesthetically appealing.	0.96				
PA3: Recipe photos look attractive.	0.92				
Usefulness (Lu, Liu, Yu, & Wang, 2008)		0.89	0.73	4.05	0.65
US1: Referring to recipe posts on iCook can reduce the time to adjust taste and flavor.	0.83				
US2: Referring to recipe posts on iCook can increase the taste and flavor quality of my own recipe.	0.90				
US3: Overall, I find recipe posts on iCook are useful in my daily life.	0.84				
Preference (Hsu & Lin, 2008)		0.94	0.84	4.28	0.60
PR1: I feel pleasant when reading recipe posts on iCook.	0.94				
PR2: I feel good when finding recipe posts on iCook.	0.93				
PR3: I like browsing recipe posts on iCook.	0.89				
Like intention (Yi, Jackson, Park, & Probst, 2006)		0.97	0.90	4.05	0.75
LI1: I intend to press like on recipe posts.	0.96				
LI2: I anticipate that I will press like on recipe posts.	0.94				
LI3: I intend to press like on recipe posts.	0.96				
Share intention (Lee & Ma, 2012)		0.96	0.88	3.83	0.82
SI1: I intend to share recipe posts on iCook in the future.	0.94				
SI2: I expect to share recipe posts on iCook.	0.94				
SI3: I plan to share recipe posts on iCook.	0.93				
SI4: Which kind of recipe posts are your favorite ones to share? Recipe, photo, activities					
Relative significance (Bhattacharjee & Sanford, 2006)		0.86	0.67	3.95	0.72
RS1: I think cooking issues are important to my daily life.	0.86				
RS2: I think cooking issues are relevant to knowledge in my daily life.	0.78				
RS3: Cooking is considerable in my daily life.	0.82				
RS4: I always cook—More/less than three times per week					
User expertise (Bhattacharjee & Sanford, 2006)		0.94	0.84	2.45	0.98
UE1: Cooking tips (e.g., frying, pan frying, boiling, deep frying)	0.85				
UE2: Kitchenware Tips (e.g., usage of slicers or knives)	0.95				
UE3: Identification of ingredients (e.g., vegetable variety, differentiation of seasoning)	0.95				
UE4: Cooking is my special skill. (yes, no)					
UE5: Have you shared recipe posts (yes, no)					

Notes: FL, factor loading; CR, composite reliability; AVE, average of variance extracted; SD, standard deviation.

$p < 0.05$). Through like intention, preference positively and indirectly affects share intention, where the indirect effect is 0.17 ($= 0.34 \times 0.49$).

Finally, like intention significantly and positively affects share intention ($\beta = 0.49$; $p < 0.001$). Results indicate that users usually have like intention before share intention.

4.4. Moderating and subgroup effects

This study examines through the AMOS moderating and subgroup model analysis the moderating effect of relative significance and user expertise, respectively. Moderation results show that only relative significance positively moderates the effect of usefulness on share

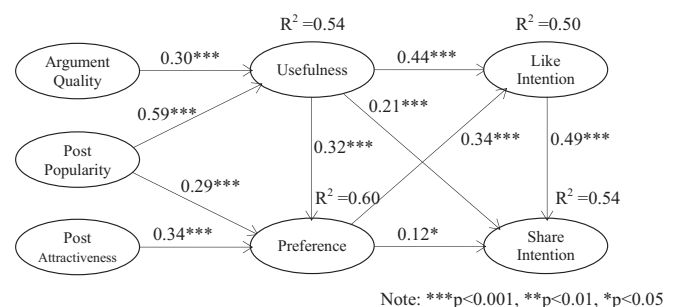
intention ($\beta = 0.22$; $p < 0.05$), while the others have no significant effect. This lack of effect may occur because some respondents seldom cook or have a poor evaluation of their own skills.

This study poses the following questions in two different groups: “I always cook (more/less than three times per week)” in the relative significance group, and “cooking is my special skill” or “have you shared recipe posts” in the user expertise group. Results show that high relative significance will make users like and share posts, while low relative significance only makes users like posts when preferred exists (Fig. 3). This makes sense since high relative significance actually helps to determine which posts have usefulness and helps in sharing posts because such users know their friends’ actual needs. Regarding posts with preference, users usually cook and are enthusiastic about the topic. Hence, they like

Table 2
Discriminant validity.

	AQ	PP	PA	US	PR	LI	SI	RS	UE
Argument quality (AQ)	0.94								
Post popularity (PP)	0.27	0.90							
Post attractiveness (PA)	0.34	0.42	0.92						
Usefulness (US)	0.43	0.62	0.46	0.86					
Preference (PR)	0.29	0.62	0.59	0.64	0.92				
Like intention (LI)	0.34	0.47	0.41	0.63	0.62	0.95			
Share intention (SI)	0.31	0.42	0.33	0.58	0.55	0.68	0.94		
Relative significance (RS)	0.34	0.58	0.40	0.57	0.58	0.49	0.50	0.82	
User expertise (UE)	0.06	0.22	0.11	0.18	0.17	0.17	0.18	0.29	0.92

Notes: Data in Table 2 are square roots of AVE (see the numbers in oblique line).

**Fig. 2.** AMOS results for the structural model.

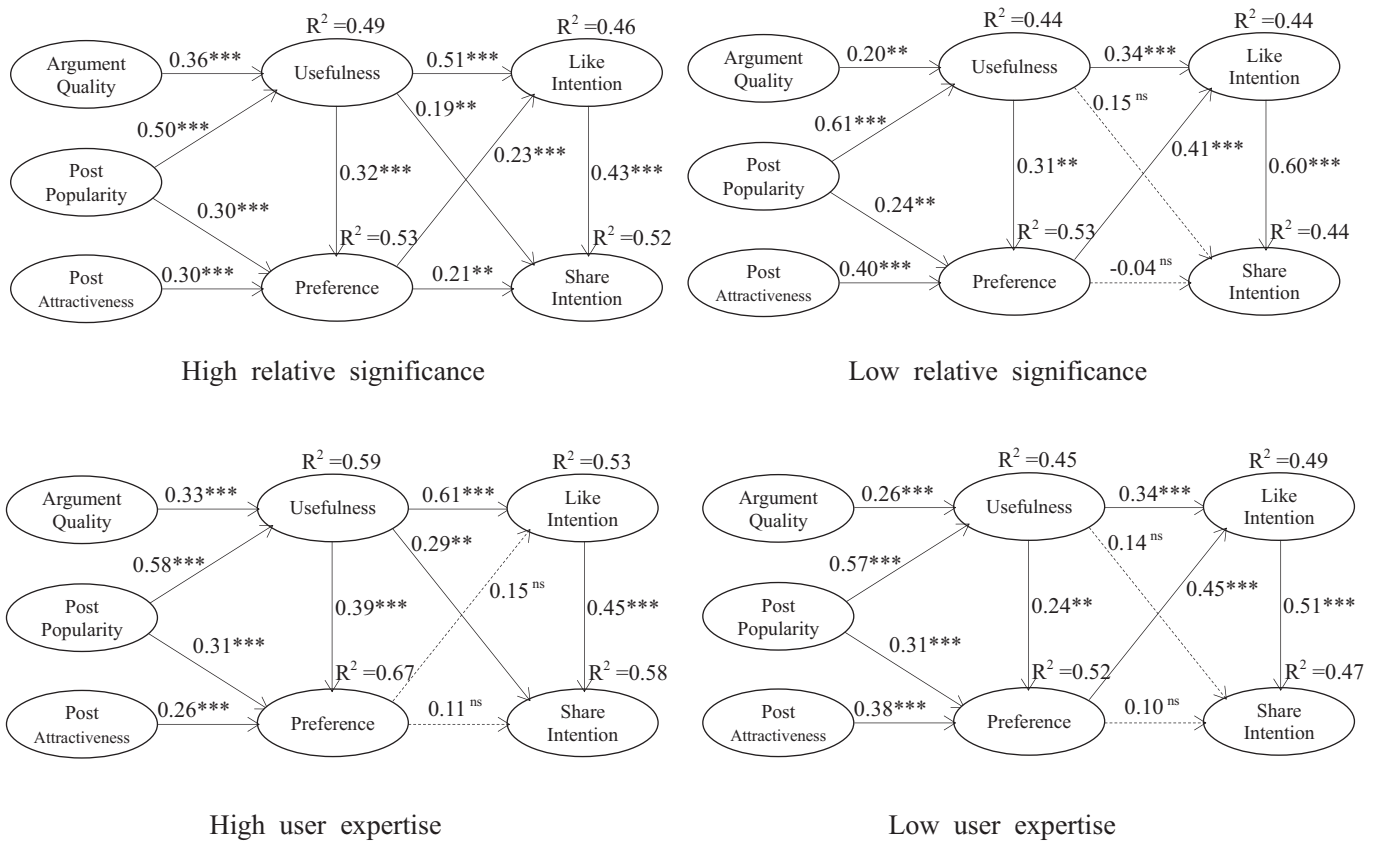


Fig. 3. Structural models of relative significance and user expertise group.

and share posts. Users with low relative significance do not have cooking experience. Hence, they like posts according to personal preference. Fig. 3 shows that users with high expertise only share useful posts, while users with lower expertise only like posts according to preference. Thus, recipe authors or post recipients with higher user expertise seem reluctant to like posts and show agreement unless such posts are practical. However, users with lower expertise are similar to those with low relative significance and like posts only according to individual preference.

5. Discussion

5.1. Theoretical implications

This study uses ELM theory to explore popularity cohesion, message diffusion, and persuasive messages in social networking groups. Past study on ELM focuses on changing attitudes and intentions towards information and products (Bhattacharjee & Sanford, 2006; Kim et al., 2010), but seldom on the intentions to promote social media marketing. In addition, ELM factors, in relation to social media marketing, focus on external influences (e.g., opinions of friends or online users) than on information. In this study, results show that post popularity plays an essential role in persuading users through both central and peripheral routes. Past studies about how post popularity directly influences usefulness and preferences to cause behavior intention support this finding (Sinclair et al., 2010). Post information influences center and peripheral routes at the same time, since post contains responses to content and popularity numbers. Therefore, post popularity can persuade both

high elaboration and low elaboration groups. Different groups demonstrate different behavioral intentions for cohesion power and diffusion. The cohesion power of like intention affects diffusion through share intention.

5.2. Managerial implications

First, this research shows that on social network sites, argument quality, post popularity, and attractiveness reinforce usefulness and preference. Fans believe that useful posts address personal needs, have clear descriptions, or receive positive comments. However, preference depends on user comments and images. To strengthen content quality, marketing managers can use collaboration methods and invite famous individuals with connections to the topic to promote marketing through newsletters, Youtube, or Facebook. Marketing managers should hold online activities and update posts to attract fans and share impressions and thoughts.

Second, results indicate that usefulness affects fan behaviors. Marketing managers can submit useful posts and cooperate with bloggers to share posts. Posts should have a link to administrators' websites or blogs, thus introducing content and increasing platform diversity. Social plug-ins may have links to such websites and blogs with like and share options.

Third, this research finds that the like intention of page fans is the essential factor in their sharing intention. When fans like a post, marketing managers have more opportunities to keep in touch with them. A "news feed" may appear out of popular posts showing which posts receive

