

Redefining Online Social Network and Its Influence on Word of Mouth Marketing

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Abstract

Word-of-mouth marketing (WOMM) has currently garnered a great deal of attention in marketing strategy, especially over online channels. Numerous studies had attempted to identify its effectiveness by conducting experiments on several online community sites, such as Blogger and Foursquare. However, its effectiveness and user motivations in order to adopt WOMM that constitute the essential components of such strategy are still unclear. In addition, only a few of these studies performs the research on pure online social platform, which theoretically divided into 2 major types: online social community and online social network. Therefore, this study is attempting to fill the theoretical gap by focusing on online social network. To tackle this problem, we collect data from an online experiment using Facebook website. In particular, we are interested in examining the impact of WOMM toward online social network and their effectiveness. Our result shows that there is no correlation between interactions of potential WOMM adopters and WOMM adopters and WOMM adoption behavior through the network. On the other hand, tie strength among users lead to WOMM adoption behavior of the potential WOMM adopters. The finding suggests a new way to utilize online social platform as a channel toward WOMM.

Keywords: Word-of-mouth marketing, online community, online social network, facebook

Introduction

Web2.0 is one of the new Internet technology developed to support more collaboration for users. It could link people altogether through comments, discussion, and instant message. It becomes the foundation of online social platforms that could enhance the function of trading, sharing, interaction, transaction, and collaboration. By utilizing Web2.0, word of mouth marketing (WOMM) can spread unlimitedly over the Internet.

Word of Mouth Marketing (WOMM) is said to be the most effective low-cost marketing strategy in order to promote customer awareness and online social network. Sellers can reach to more targeted users and be able to directly communicate with them. A study conducted by Jupiter Communications (1999) indicated that 57% of people visiting new website did so based on a personal recommendation. Comparing with any other source of influence, this percentage is a lot higher. Therefore, managers are interested in WOMM because it is often an important driver of consumer behavior. However, its effectiveness and user motivations in order to adopt WOMM that constitute the essential components of such strategy are still unclear. In addition, only a few of these studies performs the research on pure online social platform, which theoretically divided into 2 major types: 1) online social community; and 2) online social network. Therefore, this study is attempting to fill

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the theoretical gap by focusing on online social network. We expect that our result could help marketers understand more and act properly in promoting such strategy.

Online Social Network

Solis (2010) introduced the classification of online social platform based on the types of conversation. He called it as “the conversation prism” which divides online social platform into 2 major types: 1) online social network; and 2) online community. Online social network sites, such as MySpace and Facebook, allow members to: 1) edit a profile page within the site; 2) develop a list of other members on the site with whom they share a connection; 3) view the profiles and posts of other members; and 4) send messages to other members where members inside a network usually have pre-existing relationships, such as friends and family (Boyd and Ellison, 2008). The network extends indefinitely and wraps around the globe and it connects everyone on Earth. Figure 1 demonstrates the characteristics of social network.

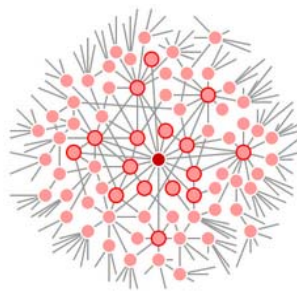


Figure 1. Structure of Social Network. E.g. ● = me, ○ = people I know (direct connections), and — = there is a relationship between 2 person. (Wu, 2010)

Online Community, on the other hand, allows users to share their topics of interests where network are held together by their common interests. Therefore, physical relationship is often not necessary. The structure of community is usually hierarchical, nested, and overlapped. Each person becomes a part in many communities at any given time. Figure 2 demonstrates the characteristics of the online community.

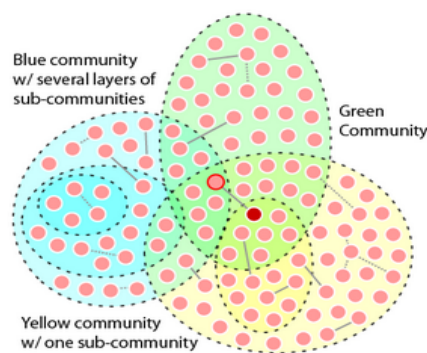


Figure 2. Structure of Online Community. E.g. I (●) am part of the green and yellow community. I know 1 person (○), who is part of all 3 communities (Wu, 2010).

What is new in the online social platform for marketers is that the network structure is now observable. Information on who is whose friend is made explicitly, especially in online social network. These features make online social platforms a naturally attractive channel for marketing purpose. Many marketers view these websites as “must have” tools. While traditional mass marketing seeks to maximize customer reach using broadcast and

print media, social media enables a more efficient approach by seeking niche markets and offering a specific types of marketing to customers by using a novel high-tech approach; especially WOMM that utilizes networks of interpersonal communications to promote products (Brooks, 1957).

An immediate reaction of firms to this opportunity is to identify the influential members who are often seen as earlier adopters or well-connected hubs in a social network, so that products can be promoted through them (Keller and Berry, 2003; Rogers, 2003).

Word of Mouth Marketing

Word of mouth marketing (WOMM) refers to the use of informal communications among networks of customers to promote products, brands, or services (Brooks, 1957; Anderson, 1998; Buttle, 1998). It is a major part of online consumer interactions, particularly within the environment of online social platforms (Cao, 2009). Users of the online social platforms are ideal targets for participation in word of mouth marketing efforts. A consumer is informed of product information through WOMM passively or actively (Rogers, 2003).

According to Social theory, people tend to connect with others who share common interests (Hill et al., 2006). An individual could passively discover a product in an accidental manner when an adopter casually mentions about it. An active individual continually searches for information WOMM. As a result, customer's decision to purchase a product or services can be strongly influenced by his or her community or general social network (Yang et al, 2006).

WOMM message can reach and potentially influence many receivers. It is usually perceived by customers to be more reliable and credible because the WOMM senders are mostly market independent (Brown et al., 2007). As a result, customers feel like they just happened to hear about the product or services rather than being directly marketed to them (Xu et al., 2008).

WOMM can be categorized based on the means by which the advertising message expands (Trusov et al., 2006). Since community marketing tends to focus more on forming community of people with common interests, they can easily share their experiences on using products or services. Furthermore, referral programs also enable satisfied customers to refer products or services to their families and friends. Viral marketing, on the other hand, spreads entertaining or informative media by encouraging customers to forward the message to their friends, and encouraging their friends to continue to forward the message in a chain reaction of consumer awareness.

Word of Mouth Marketing through Online Communities

By participating in online social community, geographical boundaries are no longer a constraint in the development of social network proximity (Hampton and Wellman, 2000; Wellman et al., 1996). In these platforms, members judge their feeling based on their closeness on shared interests rather than physical relationship. They may even consider each other as their closest friends although they seldom or never met each other before (Hiltz and Turoff, 1993).

Many prior studies attempted to examine network characteristics of online community in order to understand the effect of variables toward information diffusion and information adoption behavior. It could provide us with some useful information on the effectiveness of WOMM along the platform. Xu et al. (2008) explained network characteristics by utilizing a frequency-rating model to incorporate the frequency and valence of page viewing for potential adopters to adopters. It can explain customer's product adoption behavior in an online community. Yang et al. (2006) stated that the

frequency of an interaction among members has positive correlation with density of group cohesion or interests between nodes inside the community. In terms of individual characteristics of the nodes, a research suggest that WOM advertising is more effective when the expert power of the person from whom the recommendation is coming from is matched with the level of involvement required by the product. However, the explicitness of advertising intent may enhance or inhibit the behavioral intents of audiences depending upon specific conditions of communicator expertise and product involvement (Zhu and Tan, 2007).

Word of Mouth Marketing through Online Social Network

The online social network, on the other hand, is able to hold together by pre-established relationship of each node. Therefore, there are some degrees of objection that the previous research studied using online community as a tool may not be applicable. For example, Brown (2007) stated that tie-strength or physical relationship in the real world of members in online society should not be treated the same as tie-connection of their closeness of relationship online. However, members inside an online social network are friends based on their physical interpersonal relationship rather than their interests. This makes tie-strength between nodes inside online social network more observable than community (Michael Wu, 2010). In addition, a more recent literature also illustrates that we can predict tie-strength of a node by analyzing variables around its network. This approach provides us with very few errors comparing with using survey method (Eric and Karrie, 2009).

The Effect of Individual Usage Time and Frequency of Interaction with Others

In online social network platforms, the different amount of interactions among people in a network incur different degrees of user busyness in the network, hence the different degrees of awareness of people toward the information that flow among the network (Solis, 2010). Therefore, it is essential to study the effect of the content density (or information) and interactions among nodes toward information spreading throughout any networks. We suggest that members in online social network would like to make any decision, they would give more weights of their awareness on any contents based on the proportion of their usage time rather than the amount of interactions a person has with their friends inside the network.

Methodology

Data Collection

We define members who have adopted our content as the *adopter* of that content. Since one is mostly influenced by immediate friends, members who are directly connected to an adopter are *potential adopters*. In other words, potential adopters are the first-order friends of adopters. We termed the remaining members who did not have a direct connection with any adopter as *non-adopters*. In this study, we use Facebook as our experimental platform where two members will be defined as friends when either person establishes a friend request and another person accept the request. Therefore, the relationships are mutual. We measure how well potential adopters behave toward WOMM spreading from adopters into 2 degrees of succession: adopted and unadopted. Our goal is to see how the degree of tie-frequency and tie-strength along with density of information flow among nodes affect the degree of content adoption upon Facebook, our selected online social network. We then proposed 3 research propositions as follows:

- P1: Tie – frequency demonstrated a frequency in contact between users analyzed in online community has different degree in influencing adoption behavior over users in online social network site.
- P2: Tie – strength demonstrated physical relationships can be used to analyze user adoption behavior over an online social network site.
- P3: Usage time and amount of activities affect adoption behavior of users over an online social network site.

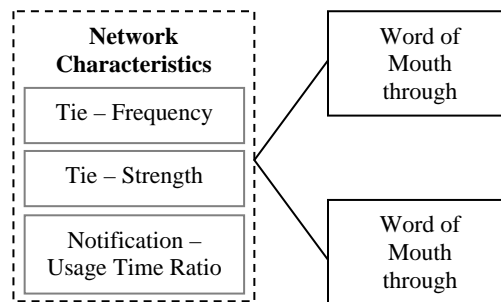


Figure 3. Proposed Research Model

We randomly selected 115 undergraduate students from the same university. Our samples consist of 49 male and 66 female, whose age are between 20-22 years old in order to control the topic for shared interest as well as the ease of observation. All of them are used for observing the density of interaction (notification) and online usage time. Our samples then were divided into 2 groups based on their academic majors. Eventually, 80 students were observed regarding their activities inside the network or tie-frequency. The rest were observed regarding their relationships strength inside the network or tie-strength.

Data Analysis

In the first stage, we applied a questionnaire to do a survey in order to find the name generator (Burt, 2000). For an experiment on tie-frequency network, participants are given a series of questions that elicit a list of network alters associated with their activities over the use of Facebook. As a result, five people who have the most exchange information (frequently view pages or chat with) are identified.

For an experiment on tie-strength network, participants are given another series of questions that elicit another list of network alters associated with the tie-strength theory. The frequencies the other participants physically come to contact and exchange information outside school hours are collected which is divided into a scale from 0-3 (Granovetter, 1973).

Finally, we create two rough networks where one held by a tie-frequency of interaction between nodes and the other held by a tie-strength of the relationships between nodes. According to the results of social network analysis, the member who has the highest degree of tie-connection in each network are assigned as adopters for our experiment and are taken for the second stage of our investigation.

The second stage, for tie frequency, we draw a network of the member that scored the highest on tie-frequency according to his/her friends in the Facebook. As a result, a network with one adopter and 44 potential adopters in a Tie-Frequency network experiment are created. For example, A is an adopter. A, B, and C are in the sample size. A and B are friends in Facebook while C are not. Therefore, B will be the potential adopter in

the experiment while C will not. Figure 3 emphasizes the relationship of adopter and potential adopters. Generator has become the standard method to enumerate and delineate networks.

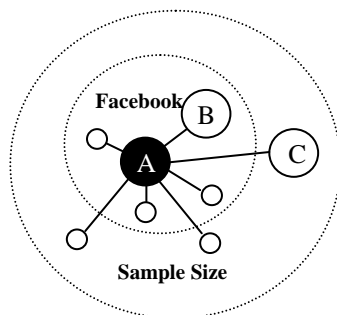


Figure 4. The relationship of the adopter and potential adopters in experiment.

We spent 30 days to observe the behavior of the member with his/her targeted friends. We observed how frequent the adopters come to contact and interact with each potential adopter and count them by words.

For a tie-strength, we draw another network to find targeted potential adopters. The network with one adopter and 22 potential adopters in an experiment on Tie-Strength network are created. We then adopted Eric and Karrie proposed questionnaires on “The Strength of Weak Ties” and “Tie Strength with Social Media” to survey each potential adopter to rate the strength of relationships with the adopter as well as a survey adopter himself to rate the strength of relationships toward each potential adopter (Granovetter, 1973; Eric and Karrie, 2009). The questions in our survey are listed as follows:

1. Whether or not your relationship with this person is strong?
2. Do you feel comfortable asking this friend to loan you \$100 or more?
3. Is this person helpful if you were looking for a job?
4. Do you feel upset if this person unfriended you?

The questions are rated scaling from strongly agree (code 4), agree (3), disagree (2), strongly disagree (1) by each targeted potential adopters. We then calculated the average of the total scores and divided by two to calculate two-way tie-strength of each potential adopter and the adopter.

In addition, we also did a survey on the online usage time and the amount of notifications per day of each targeted potential adopter to confirm our research findings illustrating that online social network members would weight their awareness of any contents based on the proportion of their online usage time on any online social network website rather than the amount of interactions the person has with their friends in the network. We define the proportion of the two variables as “Usage time – notification ratio”.

$$\text{Usage time-Notification Ratio} = \frac{\text{Usage time Per Day}}{\text{Amount of Notification Per Day}}$$

At the third stage, we create two quizzes, one for each of the network. The topics on quizzes are related to the students’ academic program in order to avoid a conflict of interest. We then assigned the chosen adopters of each network to complete the quizzes and send out a request to complete the quizzes as a viral marketing tool to all of the targeted potential adopters. We limited our timeframe of one week subject to the structure of timeline used in showing the information flow over the profile page before collected the

data on each network. Finally, we collected the data from two networks illustrated the result of related factor, Tie Frequency, Tie Strength, Usage time – Notification Ratio.

Results

In an experiment on tie-frequency network, out of 46 total potential adopters, 25 potential adopters adopted the quiz representing 54.34% of the total potential adopters. We then use statistical analysis to find a correlation between network influences associated with tie frequency and adoption behavior of the potential adopters.

Table 1. The correlation between adoption behavior each network variable.

Regression Statistics	
R Square	0.0292
Adjusted R Square	0.0071
Standard Error	0.5018
Observations	46

	df	SS	MS	F
Regression	1	0.333	0.333	1.3225
Residual	44	11.08	0.2518	

	Coefficients	Standard Error
Intercept	0.6852	0.1437
Tie Frequency	-0.0021	0.0018

According to Table 1, tie-frequency did not show any consistency in terms of influencing the effect of spreading the quiz toward potential adopters over online social network platform. The adjusted R Square only explain 0.7% variation and the correlation coefficient of -0.002 suggested that there are no relationship between adoption behavior and tie frequency.

Table 2. The correlation between adoption behavior and Tie Frequency of all potential adopters.

Regression Statistics	
R Square	0.8278
Adjusted R Square	0.82
Standard Error	0.2137
Observations	24

	df	SS	MS	F
Regression	1	4.8288	4.8288	105.7492*
Residual	22	1.0046	0.0457	

	Coefficients	Standard Error
Intercept	-1.646*	0.2211
Tie Strength	0.8076*	0.07853378

P<0.01

From Table 2, tie strength has high impact on the spreading the quiz toward potential adopters over online social network platform. Our adjusted R Square is 81.99% and the correlation coefficient of 0.80. This suggested that there are significant relationships between adoption behavior and tie strength.

Table 3. The correlation between adoption behavior and Usage Time –Notification Ratio of all potential adopters.

Regression Statistics	
R Square	0.5412163
Adjusted R Square	0.5344695
Standard Error	0.3413608
Observations	70

	df	SS	MS	F
Regression	1	9.347578	9.345782	80.21799*
Residual	68	7.92385	0.115272	

	Coefficients	Standard Error
Intercept	-0.311675*	0.105235874
Usage Time - Notification Ratio	0.0508678*	0.005679461

P<0.01

From Table 3, the busyness of potential adopters holds some effects of spreading the quiz toward adoption over online social network platform as the adjusted R Square equals to 54.12%. Since the correlation may not high enough, there might be some effects occurred from this variable along the path.

Discussion and Conclusions

Online social platforms, which can be theoretically divided into 2 major types as online social community and online social network, has differences in network characteristics as well as individual characteristics of the users of each type of platform. Prior research gained knowledge of how to use the platforms as intermediary in word of mouth spreading by either identifying influential adopters to spread word of mouth or identifying targeted potential adopters in the network (Keller and Berry, 2003; Rogers, 2003; Xu, 2007).

Corresponding to many research, tie frequency and tie strength are two out of many factors could have an impact on the characteristic of different social platforms. However, our result shows no relationships between the amount of interactions of potential adopters toward an adopter and the adoption behavior of the potential adopters. People who are the members of online community hang together by their own interests, which urge them to actively seek for suitable contents for themselves; while users in online social network passively receive contents by references or share from their friends in the network. Therefore, it may not be appropriated to use tie frequency to identify potential adopters in online social network platform.

Strength is another factor used in our analysis. Many studies suggest that physical relationship or offline relationship may not be appropriated in defining influence in an

online social network. According to our results, tie strength do have some relationships with adoption behavior of the potential adopters in online social network. Users of online social network (Facebook) usually have pre-established relationships outside the online channels. In addition, the online community does not have a bond that ties their relationships together. Therefore, adoption behavior occurs offline associated with tie strength theory in the past may also be able to apply in online social network like Facebook as well.

We also suggest that different online network platforms may affect user characteristics differently. The marketers can apply this finding to promote the effectiveness of using WOMM. We proposed an equation associated with consumer's awareness toward any contents. In general, consumer's awareness may occur based on the proportion of their usage time of any online social network website rather than the amount of interactions that person has with their friends in the network. Our result shows that the correlation of such variables with adoption behavior is relatively weak. It suggests that there are still existing gaps that we can pursue to improve the effectiveness of utilizing WOMM. However, the above findings and implications should be interpreted within its limitations. Since our study is confined to one social network, generalization to other online social network sites should be treated with caution.

In summary, with an objective to compare the impact of differences in characteristics between online community and online social network toward spreading word of mouth marketing, we choose tie frequency and tie strength to explore the network influence of sample members on Facebook, the online social network platform. Our result shows that there are significant differences in the influence of the variables between two platforms. We suggest that there should be further research to acclaim and ensure the previous findings and before then, marketers should cautiously implement these variables to promote word of mouth marketing through online social network.

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