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Understanding Awareness Diffusion in Microblogging

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ABSTRACT

The word-of-mouth (WOM) marketing has been recognized to be the most credible and important marketing approach, especially when the social network websites have become an internet phenomenon. Previous studies have shown that the dispersion of WOM across various communities has significant positive impact on product adoption (Godes and Mayzlin, 2004). On the other hand, the homophily theory in sociology indicates that people usually feel more comfortable talking with those who are similar to them than those who are not. Such psychological discomfort caused by communicating to dissimilar people may cause information "stuck" in clusters of similar people in a social network (Touchey, 1974). As a result, it is usually more difficult for information to traverse across the boundary of online communities than to spread within a community. However, it appears that the setting at a microblogging website such as twiter.com enables easier cross-boundary message dispersion. The main reason is that when a person retweets a message received from people he follows, the message is broadcasted to his followers, a group of people who might be very different from those this person follows. Given that microblogging has been an important means for organizations to communicate with prospective/existing customers, such retweet behavior becomes crucial for organizations' online branding endeavors. This study thus seeks to uncover the factors associated with the retweeting behavior of participants at twitter.com by using content and social network analysis technologies. We believe that the results from this project will have both significant contribution to academic research and important implication for practitioners.

INTRODUCTION

There is no doubt that the social network websites have become an internet phenomenon. A Nielsen report indicated that in 2008, two thirds of internet population spent ten percent of total internet time on either social network or blog sites (Nielsen, 2009). Online network communities provide an effective channel for marketers to reach potential consumers. And the word-of-mouth (WOM) marketing has been recognized to be the most credible and important marketing approach. The awareness or adoption spreads from network member to member when people talk about a product with their online friends. Research has shown that people who communicate with a prior customer of a product or service are three to five times more likely to become the customer of the same product or service than people who do not know any prior customers (Hill et al., 2006). As a result, practitioners and researchers are demanding more insight on how people influence each other in social network communities. On the other hand, the explicit linkage among online community members is well recorded, which in turn provides great opportunity for the understanding of interactions among online community members. It is much easier to measure the word-of-mouth (WOM) in an online community than in a community in real world. In addition, studies have also shown that the WOM measured in online communities is related to the adoption of product (Godes and Mayzlin, 2004).

Sociological theory of homophily (McPherson et al., 2001) has been applied to explain the product diffusion. People incline to communicate with those who are similar to them (Arvidsson, 1999; Marschan-Piekkari et al., 1999; Monteiro et al., 2004). As a result, similar people may affect each other and end up buying similar products. For example, geographic similarity has been found to be helpful for explaining consumer behavior in purchasing Japanese cars (Yang and Allenby, 2003). On the other hand, the homophily theory also indicates that people may experience psychological discomfort when they have to communicate with others who are too dissimilar from them (Touchey, 1974). The communications between dissimilar people thus could be hampered and people form clusters in social networks. As a result, WOM could be stuck within a community. However, only when the WOM traverses the boundary between communities can it reach more people.

This research-in-progress paper thus proposes to analyze archives of twitter.com to understand the dispersion of awareness information across group boundaries. Both content analysis and social network analysis will be applied to uncover factors associated the spreading of awareness information across online communities. The

paper is organized as follows. Following the introduction, section 2 reviews related literatures and introduces the twiter.com, followed by the discussion of research question development in section 3. Section 4 describes the design and our plan for this study, whereas section 5 provides the summary and discussions.

LITERATURE REVIEW

Previous studies support that people could be affected by each other's opinion (Banerjee, 1992). WOM is both a drive and an outcome of the adoption of a product or service. Consumers may have similar purchase behaviors when there is frequent communication among them. WOM usually spreads quickly within communities and slowly across them (Putsis et al., 1997; Godes and Mayzlin, 2004). People tend to have strong ties with others in the same community but have weak ties with those in different communities. However, it is usually the information that traverses the weak ties has the potential to reach more people than that traverses only the strong ties. Consequently, the dispersion of WOM across different communities, as opposed to the volume of WOM, has more significant impact on the adoption of product (Godes and Mayzline, 2004). This gives rise to another question, what are the factors related to the spread of WOM in online communities? In another word, what are the attributes of this person or a group that may contribute to the occurrence of the across community dispersion?

Various factors have been found to contribute to the dissemination of product information. Those factors include the geographic proximity (Case, 1991; Yang and Allenby, 2003; Linden et al., 2003), the direct communication with prior customers (Hill et al., 2006), the content of information itself (Frenzen and Nakamoto, 1993), as well as various social network factors (Hill et al., 2006). However, it is unclear if above mentioned factors could be applied to explain the dispersion of information in the online environment.

Microbloging is a new type of communication using web social service such as twitter.com, where people can send short messages to describe what happened in life or to express their opinion and feeling. Twitter participants could select people to follow and receive the messages from those they follow through instant message, mobile phone, e-mail, and web instantly. The communication format has become so popular that many organizations have opened an account at twitter to share information, receive feedback, and to build relationship with their customers. It appears that the setting at a microblogging website such as twiter.com enables easier cross-boundary message dispersion. The main reason is that when a person retweets a message received from people he follows, the message is broadcasted to his followers, a group of people who might be very different from those this person follows. Therefore it is crucial to understand factors associated with the retweet behavior in microblogging.

RESEARCH QUESTION DEVELOPMENT

As reviewed in section two, WOM marketing is an effective way to spread product information and to facilitate the adoption of this product. Previous studies have shown that the dispersion of WOM across various communities has significant positive impact on product adoption (Godes and Mayzlin, 2004). On the other hand, the homophily theory in sociology indicates that people intend to communicate only with those who are similar to them (Arvidsson, 1999; Marschan-Piekkari et al., 1999; Monteiro et al., 2004). The psychological discomfort due to communicating with dissimilar people may cause information "stuck" within clusters of people in a social network (Touchey, 1974). As a result, it is usually more difficult for information to traverse across the boundary of online communities than to spread within a community. However, only the product information that crosses the boundary can make WOM more effective. While it appears that the retweeting behavior enables easier cross boundary message dispersion, none research has been fund to help us understand such behavior that might be crucial for organizations' online branding endeavors.

Therefore, using the archives of twitter.com that documents message content and links among participants, this paper seeks to answer the question that under what circumstances will one person retweet information about a product/service?

RESEARCH DESIGN

In this project, we will apply technologies in both the content and social network analysis to understand the circumstances under which people retweet messages received. Specifically, we are interested in the factors associated with one person's broadcasting messages about a product. This study focuses the messages sent by companies, seeking to understand under what circumstances will the twitter participants retweet the messages sent by an organization.

We will utilize the API provided by twitter.com to collect information about messages and links among participants. We will select messages sent by companies and track how those messages propagate in the twitter community. We will utilize content analysis, sentimental analysis, and social network analysis to understand the factors associated with the retweet behavior. The dependent variables in this study are the binary variable whether people retweet the messages or not and the format of the retweet, whether the retweeter adds his/her own comments or simply retweet. Following are the independent variables we propose to study.

- Industrial Sectors. We will start with the top five sectors that account for more than 75% of the online advertising. Consumer (retail, automotive, travel, and packaged goods), financial service, computers, telecommunications, and media (television and radio broadcasting and publishing)

- Message type. When organizations send promotional messages for different purpose. One is to promote sales right way. For example, Starbucks can broadcast its promotional activities in stores to promote sales. Another type of messages is for brand imaging without any sales involving. We believe that people's retweet behavior varies with message type.

- The source of the message. People may treat a message differently if they received from a friend rather than receiving from a company.

- Previous interactivity between the sender and the retweeter. Twitter participants who use twitter as daily chat are less likely to retweet (Boyd, 2010).

- Format of retweet: whether the retweeter adds his/her own comments or simply retweet.

- Whether the person follow people who talk about the company before (frequency, objective, positive, or negative). Reading positive content or negative content about a company before may have impact on people's current retweeting behavior about a message originated from this company

- Whether the person talk about the company before. Previous messages could indicate people's attitude toward a company. And their attitude toward a company may have impact on their retweeting behavior

- Number of the same message that the a received. People may perceive a topic to be popular when they receive many messages about the same topic.

- Previous interactivity between the person who retweets the message and people who receives the retweets. People may want share good deals with friends

- Whether the pperson retweets the messages from the same sender before.

Above is a list of possible independent variables we identified. We are still in the process of refining our hypothesis development. More solid theoretic foundation will be provided for the selection of independent variables. The current status of this research is that we are in the data collection and analysis stage. We use tools developed in previous research projects to conduct both content and social network analysis. We will have preliminary results to present in August for the conference.

SUMMARIES AND DISCUSSIONS

The paper seeks to address an important issue related to the dispersion of WOM, trying to uncover the factors associated with online information dispersion. We believe that the results from this project will have both significant contribution to academic research and important implication for practitioners. Given that dispersion is an important aspect of WOM (Godes and Mayzlin, 2004) and product information can be easily trapped within a community due to homophily, it is particularly crucial for both practitioners and researchers to know the factors related to the retweet behavior in the twitter community, since such retweeting behavior enables the message dispersion across

communities. Although many previous studies provide various factors affecting the effectiveness of WOM, none of the factors could be applied to explain the phenomenon studied in this paper. The study described in this paper thus bridges this gap to study people's online behaviors in microblogging community, applying content and social network analysis technologies. In addition, practitioners may also be benefited from the results of this study, which enable a more precise in starting a WOM campaign towards internet communities.

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