Identifying Influencers in Online Social Networks:
The Role of Tie Strength

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ABSTRACT

Online social networks (OSNs) are quickly becoming a key component of the Internet. With their widespread acceptance among the general public and the tremendous amount of time that users spend on them, OSNs provide great potentials for marketing, especially viral marketing, in which marketing messages are spread among consumers via the word-of-mouth process. A critical task in viral marketing is influencer identification, i.e. finding a group of consumers as the initial receivers of a marketing message. Using agent-based modeling, this paper examines the effectiveness of tie strength as a criterion for influencer identification on OSNs. Results show that identifying influencers by the number of strong connections that a user has is superior to doing so by the total number of connections when the strength of strong connections is relatively high compared to that of weak connections or there is a relatively high percentage of strong connections between users. Implications of the results are discussed.

Keywords: Agent-Based Modeling, Influencer Identification, Networks, Online Social, Tie Strength, Viral Marketing

1. INTRODUCTION

Online social networks (OSN), such as Facebook and Twitter, are rapidly becoming a major force on the Internet. In the third quarter of 2011, users in the United States spent almost a quarter of their online time on social networks and blogs, and nearly 80% of active Internet users visit social networks and blogs (The Neilsen Company, 2011). With more than 900 million active users around the world, Facebook is the most popular Web site on the Internet and has become synonymous with Web use (The Neilsen Company, 2011). The initial public offering of Facebook in May 2012 valued the company at more than 100 billion dollars, making it one of the most valuable Internet companies at the time.

The high values placed on Facebook and other OSN companies are mainly based on their potential as a marketing platform. Some estimated that companies would spend $6 billion on advertising on OSNs in 2011, almost 9% of the total Internet marketing spending, and $10

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billion in 2012 (Armelini, 2011). Because of the vast amount of data about their users’ preferences and behaviors that OSNs possess, OSNs are a gold mine for marketers. Many companies have embraced OSNs as a new channel for communicating with their customers. According to Armelini’s (2011), two-third of the Fortune 100 companies have a Twitter account and 54% have a Facebook account.

One marketing method that is particularly suitable for OSN is viral marketing. Viral marketing is the marketing strategy in which a marketing message, such as information about a new product or service, is spread among consumers through the word-of-mouth process (Arndt, 1967; Engel, 1969). OSN is an ideal environment for viral marketing for several reasons. First, users spend a tremendous amount of time on OSN sites interacting with their friends, relatives, coworkers etc., as noted earlier, including sharing their shopping and other consumption experiences with each other (Acar, 2007; Brown, 2007). Secondly, it is much easier for consumers to “spread the word” about something on OSNs than using traditional methods, such as face-to-face and phone conversations (Dellarocas, 2006). On OSNs, a user can send a message or picture to all its connections with a single click of a mouse. Considering the large number of connections users typically have on OSNs messages can be spread much further and faster on OSNs than in traditional settings. Thirdly, the detailed data about their users and their behaviors that OSNs collect enable marketers to better control and monitor viral marketing campaigns on OSNs. For example, marketers can use data about users’ connections to better identify influencers or measure customer complain effectiveness (Iacobucci, 2007).

Realizing the great potential of viral marketing on OSNs, many retailers, such as Amazon.com and Backcountry.com, are encouraging their customers to post the products they purchased to OSNs to share with their friends. At the end of the checkout process, the customer is offered a chance to share the product that she just bought with her friends via various methods, such as Facebook and Twitter (see Figure 1 through Figure 2).

A critical step of a viral marketing campaign is influencer identification, which is to select a relatively small number of consumers as initial receivers of a marketing message. The influencers will then, hopefully, spread the message to their connections, who in turn will do the same; and eventually the message will reach a large number of consumers. The goal of influencer identification is to find those influencers who will result in the marketing message reaching the most consumers in the shortest amount of time (Delre, Jager, & Janssen, 2006; Kiss & Bichler, 2008).

Despite the extensive study of viral marketing, mostly in traditional offline settings, little attention has been paid to the word-of-mouth process at the macro level, including influencer identification methods (Bruyn & Lilien, 2008;