Full length article

Accumulation mechanism of opinion leaders' social interaction ties in virtual communities: Empirical evidence from China

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ARTICLE INFO

ABSTRACT

Considering both personal and social perspectives, self-identity and reciprocity were analyzed to identify the underlying mechanisms used by opinion leaders to accumulate their social interaction ties in virtual communities. As a key factor in maintaining the operation of virtual communities, knowledge contribution is employed in our route model. An online survey conducted in several different virtual communities, yielded 666 useable responses. The research findings indicate that opinion leaders accumulate their social interaction ties through different routes such as self-identity, knowledge contribution, and reciprocity. We also observe that both knowledge contribution and reciprocity have a mediating effect on the relation between opinion leader status and social interaction ties. In addition, knowledge contribution has a mediating effect on the relationship between self-identity and social interaction ties; and on the relationship between reciprocity and social interaction ties. The indications and implications of our findings, as well as the limitations of our study, are discussed.

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1. Introduction

With the development of information technology and increased opportunities for Internet access, communication and information technology is becoming increasingly diverse. Through the use of computers and networks, online forums and social websites have extended people's traditional social contexts and their personal learning networks (PLNs). Online communication has improved the scope of people's interactions; and contributed to knowledge sharing, people's learning (Trust, Krutka, & Carpenter, 2016) and the dissemination of important information. For example, people who have similar interests or goals often enjoy interacting and sharing knowledge with each other, and with the help of online forums, their personal relationship networks have expanded into cyberspace and resulted in the formation of different types of virtual communities (VCs). The increasing use of VCs has also attracted considerable attention and created a new educational platform for academic researchers (Cheng & Guo, 2015).

Although one of the important features of VCs is delayering, some studies show that there still exist differences on the status among members of VCs (Mutter & Kundisch, 2014). For example,

some Facebook users who have millions of followers are undoubtedly much more influential than those who have only a few. In the field of social network studies, the most influential members in communities are often called opinion leaders (Trusov, Bodapati, & Bucklin, 2010). Many studies suggest that opinion leaders can influence others a lot (Cheng, Xiong, & Xu, 2016). They have more power on influencing other people's opinions because of their expertise, or position in society (Chen, Glass, & Mccartney, 2016), and along with that they can also guide the purchasing behavior of consumers (Cho, Keum, & Shah, 2015). In the online context, opinion leaders usually have the features of high trust and reputation (Chiregi & Navimipour, 2016). Some studies indicate that opinion leaders play an important role in the formation of public opinion in VCs (Luarn, Yang, & Chiu, 2014), and it is their superior status, leadership, and social prestige that enables them to influence followers (Li, Ma, et, al., 2013). Therefore, it is of great significance for the field of virtual community studies to understand the development mechanism of opinion leaders within virtual communities.

As opinion leaders play a critical role in the dissemination of information according to an increasing number of contemporary studies that have analyzed the issue of opinion leaders in VCs. However, most studies on opinion leader in VCs take it as a static concept, suggesting that most studies have focused on the identification of opinion leaders in VCs and on their influence over others

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in this context (Eck, Jager, & Leeflang, 2011; Momtaz, Aghaie, & Alizadeh, 2011). Unlike formal organizations, opinion leaders in virtual communities are not formally appointed. On the contrary, they are usually identified or developed through the process of interacting with various members of VCs. In this sense, the formation and development of opinion leaders in virtual communities are dynamic processes, and with the development of VCs, some members have gradually become the opinion leaders among their followers. That said, being an opinion leader does not necessarily mean the individual will hold that status forever. With the development of virtual communities, some opinion leaders may continue to be opinion leaders within their social groupings, while others may become common members of the community again (Lazarsfeld, Berelson, & Gaudet, 1994). However, few studies have studied the mechanisms that underlie the development of opinion leaders in VCs.

Most relevant studies have identified that one of the most important features of opinion leaders in VCs is the great influence over their followers (Rhee, Kim, & Kim, 2007; Weng, Lim, Jiang, & He, 2010). Accordingly, numbers of connections a member has and the degree of one's interactions with others are critical criteria in identifying opinion leaders of virtual communities (Agarwal, Liu, Tang, & Yu, 2008; Cha, Haddadi, Benevenuto, & Gummadi, 2010). For example, Momtaz et al. (2011) suggested that social network analysis, which considers the centrality, structural holes, and indegree, can be used to identify opinion leaders. The social network perspective with respect to studying opinion leaders in VCs is consistent with the social capital theory. Social capital theory has been defined as "the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit (Nahapiet & Ghoshal, 1998)". Social capital theory also advocates the use of weak ties, structural holes, and social resources to analyze the structure of people in their social networks and the resources available in that structure (Lin, 2002). Thus, it is reasonable to argue that opinion leaders of virtual communities are those members who have more social capital in the community, and the amount of social capital they have will have an impact on their status as opinion leader in that community. However, few studies have revealed the mechanism that underlies the dynamic process of opinion leaders in VCs from the social capital theory.

Social capital theory primarily aims to identify how the social structure of an individual serves as a resource that creates a rich output (Coleman, 1988). Nahapiet and Ghoshal (1998) proposed that social capital consists of three distinct dimensions: structural, relational, and cognitive. The structural dimension, which is manifested as a social interaction tie, refers to the impersonal configuration of linkages between members in a social network and the extent to which the members are connected with each other (Chiu, Hsu, & Wang, 2006). This means that social interaction ties are at the core of social capital (Granovetter, 1985). In addition, virtual community members only communicate with each other through online interactions, and, thus, the relational and cognitive dimensions of social capital are mainly developed based on the social interaction ties created online (Chiu et al., 2006). For these reasons, we use social interaction ties instead of social capital as the variable for analyzing opinion leaders' social capital dynamics in VCs. This is consistent with Hsiao and Chiou (2012), who also used social interaction ties instead of social capital in their study on VCs. Overall, the purpose of this study is to propose a more comprehensive understanding of the accumulation mechanism of opinion leaders' social interaction ties in VCs by constructing a conceptual model that links opinion leaders and their social interaction ties and subsequently identifying that mechanism empirically.

2. Theoretical background

2.1. Opinion leaders and their influence

The study on opinion leaders are derived from Lazarsfeld, Berelson & Gaudes's work of the two-step flow theory (Lazarsfeld, Berelson & Gaudet, 1994): compared with gather information from mass communications, most of the voters get their information from other part of voters who pay more attention to information from media. Thus, more influential voters are called opinion leaders. The two-step flow theory proposed that opinion leaders connected to the public through mass media, play a large role in filtering and re-disseminating information. Earlier studies about opinion leaders concentrated on the field of communication, and many studies after that identified the relationship between opinion leaders and followers exists in many other fields (Shoham & Ruvio, 2008). With the development of the Internet and the advent of the Web 2.0, people found that opinion leaders also exist in VCs. In recent studies, opinion leaders are defined as engaged and competent individuals who are viewed as honest and trustworthy by opinion followers, with whom they frequently discuss issues with in general (Turcotte, York, et, al., 2015). Compared to the traditional context where opinion leaders only have a limited influence on their friends; in the online context opinion leaders can influence many more Internet users due to the ease of access for their followers (Lyons & Henderson, 2005). Some studies have identified that leaders have the critical influences on VCs' development. Leaders in VCs can foster members' interactions, participation, as well as the density, reciprocity and transitivity of their followers, which indicates how members form an interactive, cohesive, and equally-distributed community (Ouyang & Scharber, 2017). However, Zhang, Liu, Chen, Wang, and Huang (2017) pointed out that the online interactivity of its members in a VC does not always automatically promote members' interactive networks and the cohesion of the community. Thus, the mechanism of how opinion leaders expand their interactive networks in VCs has not yet been identified.

Opinion leaders demonstrate their influence, not only on other people's opinions but also on other people's attitudes and behaviors (Valente & Pumpuang, 2007). Based on the analysis of previous studies, the formation of opinion leaders and their influence are mainly related to their expertise in a field, involvement, and social ties (Li & Du, 2011). Besides, members' perceived risk and their trust in opinion leaders are also considered to play important roles in the process that opinion leaders have their influence over the followers (Awad & Ragowsky, 2008; Ruvio & Shoham, 2007). The underlying dimensions of opinion leadership have often been assessed using questionnaires and self-reports, and some measurements of opinion leadership included the ability to persuade your audience (Nisbet & Kotcher, 2009).

2.2. Social interaction ties

Coming from the theory of social capital, the concept of "social interaction ties" is very important. As one of the three dimensions of social capital, individual's social interaction ties refer to the network of relationships possessed by him or her. One of the important perspectives on social capital theory is the social network analysis, which analyses social capital from the relationship among individuals. Social network analysis suggests that social capital is embedded in the network formed by individuals through all kinds of social relationships and interactions within these networks. Based on the concepts of embedded, structural hole, and centrality, social network analysis constructs the core of social capital theory. These concepts define the features of individuals in