



Knowledge contribution behavior in online Q&A communities: An empirical investigation

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ABSTRACT

As social networks and media technology combine, online Q&A communities are playing an important role in satisfying people's knowledge exchange needs. However, the combination of social networks and media technology does not mean that an exchange of knowledge will occur. Users are the critical components of an online Q&A community, and their active participation is critical for its development. Thus, it is crucial to figure out factors impacting users' motivation to participate in community activities, especially knowledge contribution. In this study, we focus on user behavior regarding knowledge contribution in social Q&A communities, and differentiate users' initial participation behavior from continued participation behavior. We collect users' activity data from a well-known Chinese social Q&A community, and the results show that identity-based trust, feedback from previous knowledge contribution, opportunities of social exposure, word-of-mouth marketing, and pressure from norms of reciprocity have a positive impact on users' continued knowledge contribution behavior.

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1. Introduction

Knowledge seeking is an important activity of people. Before the internet age, people could only acquire knowledge through books, newspapers, magazines and other traditional channels. With the development of information technology, especially the Internet, user-centered social media have greatly changed the ways by which people acquire knowledge. In social media, individuals are nodes connected with each other, and each node can function as a knowledge creator, knowledge consumer, and/or knowledge disseminator. Under this background, social media based on Web 2.0 appears, develops, and has gradually become an important way for people to acquire and exchange knowledge. Among the different types of social media, online social Q&A communities, where people ask, answer, and discuss questions regarding common practices or interests (Zhao, Detlor, & Connelly, 2016), provide people with channels to propose their personalized questions to

the public directly.

Although different online social media may generate content in different ways, they do not generate content by themselves. Actually, users are the content producers and consumers on these platforms. Therefore, their content generation and dissemination behavior in online social media are very important for the development of social media. With the development of information technology, the competition among user-centered social media becomes fiercer. Retaining users and encouraging them to generate and disseminate more content is critical for the development of social media.

Currently, research on participation behavior in social media mainly concentrate on general social media, such as Twitter, Facebook, YouTube (Oh & Syn, 2015; Rudat & Buder, 2015; Shi, Rui, & Whinston, 2014), etc. Different from this stream of research, our study focuses on social Q&A communities where content generated are knowledge presented as discussions regarding common practices or interests while content in general social media, such as Facebook, Twitter etc., are usually opinions, moods, or comments. Furthermore, from the perspective of different types of knowledge representation, our study is also different from another two fields of research. Firstly, our study can be differentiated from research on

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collective intelligence, such as open source software projects, Wikipedia etc., because although users in Q&A communities discuss questions regarding common topics, they could present their knowledge individually instead of presenting collectively into a same artifact (i.e. a software or a wiki article), avoiding the risk of collective ignorance. Secondly, our study is also different from studies on general Q&A platforms, such as Baidu Answers, Yahoo! Answers etc., for the reason that the complete social networks (users can follow not only other users but also topics and questions) and feedback mechanism (users can freely evaluate other users' answers by upvoting or downvoting, and answers are ranked by number of upvotes given by community members) make knowledge on social Q&A communities appear as accredited knowledge while knowledge on general Q&A platforms is just arranged as lists.

Moreover, existing studies do not distinguish initial contribution behavior from continuous contribution behavior. However, extant research on behavior in information systems shows that factors affecting initial behavior and continuous behavior are significantly different from each other (Venkatesh & Davis, 2000; Venkatesh, Morris, Davis, & Davis, 2003). Initial contribution behavior is mainly influenced by external factors, such as social pressure and publicity. However, continuous contribution behavior is more likely to be affected by users' previous experience and a consideration of system functions, social relations and many other aspects.

There are mainly two types of users in social Q&A communities: questioners and answerers. Questioners seek knowledge in the community by asking questions, while answerers contribute knowledge by providing answers to these questions. Questioners have inherent motivation to promote the development of the community for the purpose of acquiring more answers and knowledge. However, to maintain answerers' interests in the community, extra incentives are needed to stimulate them to contribute more knowledge (Jabr, Mookerjee, Tan, & Mookerjee, 2014). In fact, despite the large number of online communities, very few of them have succeeded in retaining users and motivate knowledge contribution (Ma & Agarwal, 2007). Online social Q&A communities can be a significant source of value for knowledge exchange, however, this value can only be realized when users take active parts in the knowledge contribution activities (Butler, 2001). Due to the "public goods" nature of knowledge in online social Q&A communities, users may lack sufficient incentives to contribute. Users can benefit from other users' contribution without contributing, which may cause the problem of under-contribution and hinder the growth of online social Q&A communities (Chen, Harper, Konstan, & Li, 2010). A natural question we can raise here is: how to motivate community members to contribute knowledge? To solve this problem, it is the common concern for both scholars and practitioners to identify factors affecting answerers' participation behavior, and accordingly encourage them to make more knowledge contribution.

Existing literature has studied factors influencing users' participation behavior in virtual communities from the perspectives of website function design (Ma & Agarwal, 2007), incentive mechanism (Jabr, et al., 2014), user motivation (Ardichvili, Page, & Wentling, 2003) and some other aspects. Many factors that affect users' knowledge contribution behavior have been identified, such as responsibility and norms (Wasko & Faraj, 2000), trust (Tsai & Ghoshal, 1998), recognition (Constant, Sproull, & Kiesler, 1996), image motivation (Jabr, et al., 2014), self-efficacy (Hsu, Ju, Yen, & Chang, 2007; Kankanhalli, Tan, & Wei, 2005), outcome expectation (Kolekofski & Heminger, 2003), etc. Mostly, these studies adopted surveys to explore the factors influencing a user's participation behavior from psychological perspectives, while few empirical studies have adopted data of real community activities.

Hence, this study focuses on users' knowledge contribution

behavior in social Q&A communities, and distinguishes users' participation behavior into initial participation behavior and continuous participation behavior. We collected first-hand user activity data in a famous Chinese social Q&A community to explore the factors influencing users' continuous knowledge contribution behavior in the community.

2. Theoretical analysis and research hypotheses

2.1. Related literature

2.1.1. Knowledge contribution behavior

Based on existing theories, such as the theory of social awareness (Hsu, et al., 2007), social capital theory (Kankanhalli, et al., 2005), social exchange theory (Rui & Whinston, 2012), social identity theory (Ren, et al., 2012) etc., researchers have identified many factors influencing users' participation behavior in knowledge communities. Based on the framework of Wang and Noe (2010), this paper summarizes the factors that influence knowledge sharing behavior in virtual communities into three categories: personal characteristics, network characteristics and mental motivation.

2.1.1.1. Personal characteristics. Knowledge sharing in virtual communities is non-obligatory, and users' personality and experience can play an important role in determining whether to share or not. Existing research focuses on the impact of confidence, openness, computer skills and willingness, educational background, working experience and other aspects of users' knowledge sharing behavior. For example, a study by Cabrera, Collins, and Salgado (2006) found that the more willing a user is to share his past experiences, the more likely he will exchange knowledge with others. Jarvenpaa and Staples (2000) studied factors influencing a user's knowledge sharing behavior from the perspectives of computer skills and willingness. The results showed that computer skills were significantly and positively correlated with the willingness of knowledge sharing. Constant, Kiesler, and Sproull (1994) found that employees who were better educated and had worked for longer years would be more likely to take part in knowledge sharing activities. Based on a study on user support forums, Jabr et al. (2014) concluded that the more complete a user's personal information (such as online identity, personal label, self-presentation and other detailed information) is, the more likely he will participate in the knowledge sharing activities in the community. In addition, it is more possible for those users who are more confident about their ability of knowledge contribution and the usefulness of the knowledge they own to share knowledge in a community (Bordia, Irmer, & Abusah, 2006).

2.1.1.2. Network characteristics. Driven by Web 2.0 technology, knowledge management communities have brought in the elements of social networks and have gained great success. Research by Cross and Cummings (2004) showed that, for users in virtual communities, the quantity of social ties and the quality of interpersonal relationships were directly related to the quality and quantity of knowledge contribution, and could enhance their perception of the usefulness of the knowledge shared in the community. Jabr et al. (2014) studied the product communities of Apple, Oracle, SAP and SUN and found that social exposure is one of the motivations for users to use the communities. Social network is an important channel for social exposure. Users are more likely to answer questions if they have more opportunity for social exposure. Feedback from other users in the social network, especially positive feedback is also important factors affecting users' continuous participating behavior in the social community. Burke,

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