Why Do Users Participate in Online Communities? The Effect of Motivational Affordances, Comments, and Peer Contribution on Continuance

Emergent Research Forum (ERF)

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Abstract

Online communities are increasingly being used by technical professionals and aspirants to access information and knowledge, discuss and share experiences, and collaborate in solving problems. Recently, the application of gamification in non-game contexts has attracted the attention of both practitioners and researchers and has generally been found to have a positive effect on user experiences. This research incorporates community design mechanisms and social mechanisms into a comprehensive model to explain the variance in continued online community participation. The research model is tested by using survival analysis models on a dataset collected from an online question and answer community. This research contributes by not only extending our current understanding of participant involvement in online communities, but also by shedding light on the design and management of online communities focused on knowledge building.

Keywords

Online communities, continued participation, gamification, social influence, survival analysis.

Introduction

As social media platforms for crowdsourcing and collaborative problem solving, online communities can aggregate distributed information and knowledge, thus creating a way to empower participants with more knowledge and expertise in problem solving. By participating in online communities, people change the ways in which they communicate, learn, and collaborate (Capiluppi et al. 2013). However, not all participants contribute equally to online communities, particularly in communities focused primarily on utilitarian knowledge building and sharing in the technical context [versus more hedonically or emotionally supportive communities, such as online gaming or online health communities (e.g., Chen and Straub 2015)]. Lurkers who regularly visit an online community but rarely post make up a large majority of online community participants (Nonnecke and Preece 2000). On the other hand, super users often leverage the platform to build their reputations rather than simply glean information to solve their own problems. Consequently, an important issue concerns the engagement and contribution of participants in that incentivizing users to continue to engage and contribute is one of the biggest challenges for the sustainability and effectiveness of such online communities (Wang and Fesenmaier 2004).

Recently, gamification has attracted the attention of both practitioners and researchers as a means of motivating user engagement in non-game contexts such as training and education, marketing services, and online social media. Gamification generally refers to the application of game design elements in non-game settings to improve user experience (Deterding et al. 2011). Online communities in particular are
increasingly using gamified motivational affordances such as experience points, badges, leaderboards, levels, rewards, and feedback (Hamari et al. 2014) to attract and maintain active contributors.

Although gamification is generally believed to be beneficial in encouraging user engagement in online communities, there is a lack of research using strong theoretical frameworks to explain the mechanisms within a gamification approach that can affect user participation (Putz and Treiblmaier 2015). Specifically, how gamification affordances can effectively motivate participant contribution is still an open research question (Immorlica et al. 2015). In addition, gamification mechanisms, as a part of online community incentive design, can only explain a portion of the variance in participation. Social mechanisms are also likely to be highly influential, but, to our knowledge, research has yet to integrate both gamification and social mechanisms into a comprehensive model. Previous research on online communities that has included social mechanisms is primarily based on anticipated reciprocity (e.g., Faraj and Johnson 2011). From the perspective of the theory of reciprocity (Gouldner 1960), individuals in social interactions are motivated by the norm of reciprocity that they will be rewarded for the contributions made to others. However, anticipated reciprocity cannot fully explain why online participants still choose to contribute after they have already obtained a high level of reputation or rewards.

Furthermore, participants may be socially influenced in ways that may change their engagement and contribution to the online communities. However, the mechanism of how users are motivated to participate in online community is not well understood, especially when motivational affordances as well as the effects of online collaborators are taken into consideration. The current research intends to fill the knowledge gap by addressing the following research question:

**RQ:** What gamification and social theoretical factors lead to member’s continued participation in online knowledge building and sharing communities?

**Theoretical Background**

A comprehensive research model is proposed to guide our intellectual exploration. As shown in Figure 1, the research framework integrates community incentive design and social mechanisms including motivational affordances of game design elements, received comments from peers, and peer contribution to explain variation in individual’s continued participation behavior. The rational for the proposed research model is explained further in the subsequent subsections.

**Motivational Affordances of Gamified Design**

An affordance describes the general actionable properties of an object that can satisfy individuals’ particular needs (Gibson 1977). Motivational affordances of gameful experiences provided by online communities promote the feeling of more interest and enjoyment in the social interaction inherent in online communities. An important purpose of such motivational affordances is to attract and maintain the active
engagement of participants. There is evidence that such affordances do work. For example, empirical studies have shown that the removal of gamification mechanisms from an intra-enterprise social network service reduces the overall participation and contribution to the social network platform (Thom et al. 2012).

Specific motivational affordances offered by gamification mechanisms can be explained from the perspective of self-determination theory (Deci and Ryan 2008), a theory which differentiates two most basic types of motivations: (1) extrinsic motivation describing the inclination to do something for separate consequence, and (2) intrinsic motivation pertaining to principal sources of inherent satisfaction and enjoyment. In the context of online communities that depend on participants’ voluntary involvement, motivational affordances by themselves are extrinsic although they usually have no tangible economic benefits or compensation for the time and effort spent by participants in online collaboration. The number of votes received and badges granted to a member indicates her/his expertise, competence, and the extent of past contributions. The signaling function of gameful elements in online communities helps participants to evaluate the trustworthiness of their peers and the reliability of their solutions/advice. On the other hand, such irredeemable reputation scores, votes, or badges gained from online participation can be internalized into intrinsic motivations such as enjoyment, feeling of competence, and recognition of abilities, thus driving participants’ continued engagement and contribution in the online communities. Both the signaling and intrinsic motivational roles of gameful elements suggest that votes and badges obtained from online communities work as catalysts for participants’ online engagement. Based on this reasoning, we hypothesize that:

**H1:** Participants receiving higher votes are more likely to continue participation in online communities.

**H2:** Participants granted more badges are more likely to continue participation in online communities.

**Comments from Online Peers**

Feedback in the form of comments from online peers is another important factor that leads to the success of any online community. As online peers collaborate with the focal participant in knowledge sharing and building, comments from peers are one of the major types of feedback in online communities. Besides the gameful experiences provided by online communities, comments from peers motivate participants to delve deeply into online collaboration. The number of received comments indicates the degree of connectedness and the extent of social interaction of the focal participant in the online communities. Extant research suggests that social interaction is one important motivation for participants to make contributions to online communities (e.g., Huang and Chengalur-Smith 2014). The importance of meaningful feedback in the form of textual comments to guide and motivate effective behavior has been addressed by previous research. Pavlou and Dimoka (2006) suggested that textual comment feedback helps build a buyer’s trust in a seller’s credibility and benevolence in an online marketplace. Consequently, we expect that:

**H3:** Participants receiving more comments from online peers are more likely to continue participation in online communities.

**Social Influence and Behavioral Modeling of Peer Contribution**

Online participants expose themselves to others by posting and collaborating with peers. As a result, participants may be socially influenced in how peers contribute to the online communities. Social influence (also known as social contagion) refers to the belief that individual’s cognition, attitude, and behavior are influenced by others. According to social influence theory, individuals change their attitudes or behaviors through three social influence processes: (1) a normative influence refers to influence to conform to the positive expectation of others; (2) a value-expressive influence functions through identification when an individual enhances his or her image among others; and 3) an informational influence through internalization refers to accepting information from another as evidence about reality (Deutsch and Gerard 1955). Being involved in online communities, participants not only gain knowledge and enhance their expertise, but also better understand the norms of the community as well as expectations of their peers. With the social influence in online communities, participants model the desired behaviors of their peers. The participation behaviors of peers who collaborate with the focal individual in posting, explicating, and solving problems are treated as a benchmark for the participant’s behavior choice. Social learning theory...
(Bandura 1977) suggests that behavioral modeling is one of the primary processes through which individuals behave similarly to people they observe or interact in social context. Based on the research regarding social influence and behavioral modeling, we expect that:

**H4:** Peer contribution relates positively to a participant’s continued participation in online communities.

**Moderating Effects of Social Mechanisms**

Research on individual behaviors has suggested that different social mechanisms have different roles in online communities (e.g., Faraj et al. 2015). As our comprehensive research model integrates both community design (i.e., votes and badges) and social mechanisms (i.e., comments and contribution of peers) to explain participants’ continued involvement in online communities, it is imperative and interesting to understand how social mechanisms play a role in the motivating process of gameful design elements. Social comparison theory can be applied to best explain the moderating role of social mechanisms in the effect of motivational affordance on individuals’ continued participation. Social comparison theory posits that individuals tend to compare themselves with others as a means of self-evaluation and self-enhancement (Festinger 1954). According to this rationale, participants in online communities compare their votes and badges with online peers in that these measures are readily visible to all community members. Thus, the loss or gain of reputation in the forms of votes and badges granted may influence their ongoing participation differently under specific social interacting settings. For those participants who have a higher degree of connectedness and higher extent of social interaction with peers in the online community, the motivational affordance of gamified elements will be more effective in recognizing the original contributor’s efforts and expertise in related knowledge domains. Consequently, the contributor’s self-efficacy, sense of community, and obligation will be further enhanced, and subsequently promoting longer-term continued participation to the online community.

The existence of social comparison among peers, together with the extrinsic and intrinsic motivation of gameful experience, suggests that received comments and peer contribution work as catalysts for enhancing the effects of motivational design elements on participant online engagement. Thus, we expect that received comments and peer contribution moderate the effect of motivational affordance on continued participation. Specifically, we hypothesize that:

**H5a:** The positive relationship between votes and continued participation is moderated by received comments such that the relationship is more positive when more comments are received.

**H5b:** The positive relationship between badges and continued participation is moderated by received comments such that the relationship is more positive when more comments are received.

**H6a:** The positive relationship between votes and continued participation is moderated by peer contribution such that the relationship is more positive when peer contribution is higher.

**H6b:** The positive relationship between badges and continued participation is moderated by peer contribution such that the relationship is more positive when peer contribution is higher.

**Research Method**

A field study using real world participation data is conducted to investigate the research question. Data were collected from a popular community-based question and answer (Q&A) site for computer programmers. Given that the dependent variable represents the duration a user actively participates in online community, survival analysis models are most appropriate. We plan to use the proportional hazard model (PHM) first proposed by Cox (1992) to test the proposed research model.

**Expected Contribution**

Online communities are an important platform for crowdsourcing and collaborative problem solving. An emerging area of research in this domain is to more comprehensively explain the underlying motivations behind ongoing participant involvement in online communities. Recently, the application of gamification in non-game contexts has attracted the attention of both practitioners and researchers and has generally
found that gamification can have a positive effect on participant experiences. With the aims to answer the question of what factors lead to participants contributing to online communities, we propose a comprehensive research framework which integrates both community design and social mechanisms. The theoretical research model is tested by using survival analysis models on a dataset collected from an online question and answer community. This approach allows a more contextualized and comprehensive understanding of the antecedents that lead to continued participation. Data analysis is ongoing but we have high expectations that the predictions of our survival model will be confirmed. Findings of this study will yield insights into how the collaboration features of online knowledge building and sharing communities can be designed or enhanced to better promote continued participation of members.

REFERENCES