

Chapter 10

Understanding Users' Contributions in Open Source Software Communities: A Social Influence Perspective

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ABSTRACT

User contributions are crucial to the success of open source software (OSS) communities. As users conduct frequent interactions between each other, their contribution behaviour may receive the social influence from other members. Drawing on the social influence theory, this research examined user contributions in OSS communities. The results indicated that contribution intention is significantly affected by social identity, which includes cognitive, affective and evaluative identity. In addition, the researchers found that the subjective norm has a negative effect on contribution intention. The results imply that service providers need to enhance user identification with the community in order to facilitate their contribution in OSS communities.

INTRODUCTION

Open source software (OSS) has received wide adoption among enterprises in recent years (Ghapanchi, 2015). For example, Taobao, which is the largest e-commerce website in China, has applied OSS in its operation systems, servers and databases. The OSS has helped Taobao to burden the huge amount of views and transactions, especially on November 11, which is similar to Black Friday in US. A few reputable companies such as Google and Facebook have also actively adopted OSS in their business operations (Spaeth, von Krogh & He, 2015). OSS communities provide a platform for programmers to effectively interact with each other and collectively develop software. They can release projects, discuss with other members and optimize project codes. Github is a representative OSS community. Compared to these well-known OSS communities, other communities face a few problems such as inactive user

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participation, lack of quality OSS projects, and poor maintenance of projects (Ho & Rai, 2017). Among these, users' contribution is crucial to the success of OSS communities (Spaeth et al., 2015). If users contribute little to a community, the service provider cannot survive in the intense competition as the community loses its value to users. Service providers need to understand the factors affecting user contribution. Then they can take effective measures to facilitate user contribution and ensure the continuous development of OSS communities.

Previous research has examined OSS user behaviour from multiple perspectives, such as the motivational theory (Choi & Pruett, 2015; Spaeth et al., 2015), flow (Csikszentmihalyi & Csikszentmihalyi, 1988; Daniel and Stewart, 2016), reputation (Cai and Zhu, 2016), and network structure (Choi & Chengalur-Smith, 2015; Behfar, Turkina & Burger-Helmchen, 2018). Various factors such as intrinsic motivation, attention, and user reputation are found to affect OSS users' behaviour. In addition to these internal factors, users may also receive external social influence from other members as they actively interact with each other in a community. For example, users may comply with other important members' opinions to contribute their knowledge on a project. They may also internalize group values into their own beliefs and develop a strong identification with the community, such as membership, belongingness, and attachment. These social influences may affect a user's behaviour in OSS communities.

The purpose of this research is to draw on the social influence theory to examine users' contribution in OSS communities. As users conduct frequent social interactions with other members in a community, they may form close social networking relationships between each other. Then their behavioural decision such as contribution may receive social influence from others. According to the social influence theory, an individual user's behaviour is affected by three social processes: compliance, identification and internalization, which is represented by subjective norm, social identity and group norm, respectively (Dholakia, Bagozzi & Pearo, 2004). In addition, social identity consists of three dimensions: cognitive, affective and evaluative. This research will identify the relative effect of these social influence factors on user contribution in OSS communities. The results enrich extant research on OSS user behaviour and advance our understanding of OSS community users' contribution. As noted earlier, although extant research has identified the effect of internal factors such as motivations (Spaeth et al., 2015) and flow (Daniel & Stewart, 2016) on user behaviour, it has seldom examined the effect of external social influence on user contribution in OSS communities. However, as a member of communities, individual user behaviour may receive social influence from other members. This research tries to fill the gap. The results imply that service providers need to consider the effect of social influence when facilitating users' contribution in OSS communities.

RESEARCH MODEL AND HYPOTHESES

OSS Community User Behaviour

As an emerging service, OSS community user behaviour has received attention from information systems researchers. They have examined the intrinsic motivations affecting user behaviour. found that both credibility and openness affect social identification, which in turn affects users' intrinsic motivation to participate in OSS projects. reported that library OSS users have a high level of intrinsic motivations, which include altruism and fun.

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