MISQ Archivist

Developer Centrality and the Impact of Value Congruence and Incongruence on Commitment and Core Contribution Activity in Open Source Software Communities

Likoebe M. Maruping, Sherae L. Daniel, and Marcelo Cataldo

Abstract

Open source software (OSS) communities are dependent on the code contributions of developers who, in many cases, never meet face-to-face and collaborate primarily through technology-enabled means. With their fluid membership, such communities often rely on engaging the commitment of developers to their cause. Given the changing nature of OSS communities, developers face barriers in appreciating appropriate ways of contributing to the collaborative effort. Such uncertainty about how to contribute results in OSS communities losing developers as they devote their attention to other, more welcoming, communities. In this research, we draw upon uncertainty reduction theory to argue that developers have two alternative avenues at their disposal to gain certainty about how to contribute: passive and interactive. Leveraging the person–environment fit perspective, we argue that congruence and incongruence in the OSS values of a developer and an OSS community serves as an avenue for passive approaches to gaining certainty, to the degree that appropriate ways of contributing are encoded in these values. Further, leveraging social network theory, we argue that centrality within a community's communication network constitutes an avenue for interactive approaches for gaining certainty about how to contribute. Using polynomial regression analysis, we analyze survey and archival data from 410 developers in an OSS community. Results suggest that developer centrality moderates the impact of congruence and incongruence in OSS values on commitment. Moreover, commitment fully mediates the impact of OSS value congruence and incongruence on developer contribution activity. We discuss the implications of our findings for research and practice.

Keywords: Open source software, P–E fit, uncertainty reduction theory, social networks, centrality, value congruence, value incongruence, commitment, code contribution, polynomial regression analysis