

Project Team Formation in Open Source Software Development

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Abstract

Software development has traditionally been regarded as an activity that can only be effectively conducted and managed within a firm setting. However, contrary to such assertions, the open source software development (OSSD) approach, in which software developers in Internet-based communities coordinate to voluntarily contribute programming code, has recently emerged as a promising alternative to developing high quality software. Although many high profile cases of successful OSSD projects exist (e.g., Apache, OpenOffice, Emacs, PHP etc.), it is the harsh reality that the vast majority of OSS projects fail to take off and become abandoned. One of the main reasons cited for the failure of OSS projects is the lack of developers in the project teams, or put differently, the inability of the software project to bring together a critical mass of developers. Since it is typically the case that OSSD projects do not provide monetary incentives for developers' contributions, many OSSD projects are under-staffed and consequently are not well-equipped to deal with the scale and complexity of software development. In this paper, we examine how OSSD project teams are formed. More specifically, we investigate whether social ties impact OSSD team formation and developers' joining behaviors. Using software project data from real world OSSD projects, we empirically test the impact of social ties on software team formation from two different levels – the project level and the developer level. Overall, we find that the existence and the amount of prior social relations in the network do increase the probability of an OSS project to attract more developers and that a developer's prior relationships with project initiators do increase the likelihood that a developer will join a particular project. We discuss the implications of our results with respect to open source software development and software project management.

Keywords: Open Source Software (OSS), Open Source Software Development (OSSD), Social Capital, Social Network, Team Formation