**Essays on Value Creation in the Open Source Phenomenon: Unde****rstanding the Influence of Work Structures, Team Composition, and Community Ideologies**

Abstract

This dissertation comprising three essays explores the value creation mechanisms associated with the work structures, team composition, and community ideologies of free (libre) and open source software (FLOSS) projects. The first essay, examines how the unique nature of FLOSS work which is dominated by the sequential layering of individual tasks, referred to as superposition, acts as an antecedent to the project’s success. Building on the theory of collaboration through open superposition, the essay theorizes the motivational mechanisms that operate within superposed work structures and unearths the contextual conditions that may limit the influence of superposition on FLOSS project value. Furthermore, given the increasing usage of FLOSS by organizations, the study investigates the specificities brought to these motivational mechanisms when FLOSS projects are owned by organizations. Using an innovative operationalization of the work structures of FLOSS projects, this essay finds support for a non-linear relationship between the degree of superposition and the success of the project. Further, this relationship is moderated by the type of ownership of the project. Overall, the first essay advances our understanding of work structures, motivation, and organizational participation in FLOSS environments. It also provides FLOSS practitioners with valuable insights for modeling the project’s task work to facilitate their success.

While the first essay establishes the importance of task-work organization in FLOSS projects, the second essay expands the inquiry into the role of team composition in the project’s success. Building on the theories of coordination and network governance, this essay studies the influence of source code access restrictions imposed on team members in mitigating coordination challenges. The study also investigates the changes brought to the coordination mechanisms when open source projects are owned by organizations. Using a Cox proportional hazard model, the study demonstrates that the relationship between the proportion of contributors who are given write access to the source code in the team and the survival of the project, is moderated by the nature of project ownership. Interestingly, the observed moderation is a crossover interaction effect that changes from negative for individual owned projects to positive for organization owned projects. Overall, the second essay advances our understanding about contributor roles, access restrictions, and organizational participation in open source environments. The findings provide open source researchers and practitioners with fresh insights for better understanding and modeling project teams to facilitate their success.

The third essay pursues an overarching view of the FLOSS community by examining the ideological underpinnings of the FLOSS community and studies its influence on project success. The essay scrutinizes two ideological shifts seen in the FLOSS community that have altered the beliefs of ‘openness’ and ‘prevention of commercial appropriation’, on which the open source phenomenon was founded. First, the emergence of ‘permissive FLOSS licenses’ that allow commercial appropriation of the collaboratively developed code, and second, ‘organizational ownership’ of FLOSS projects. Rooted in self-determination theory, this essay theorizes the mechanisms through which ideological changes influence the pathways through which work structures in FLOSS projects are related to their success. Using an instrument variable approach, this essay finds that the ideological shift pertaining to license type has a significant influence on the relationship between the work structures and project success for both individual and organization owned projects. Overall, the third essay advances our understanding of the important role that ideologies play in shaping the relationship between work structures and success of the FLOSS projects.

# Introduction

Define open source

## Structure of The Dissertation

## Three Essays at a Glance

Each essay is self-contained in terms of literature review, hypotheses development, and implications for research and practice. The essays together contribute to different aspects of literature on FLOSS. The research hypotheses for all the three essays are summarized in Table 1-2. Further, Table 1-3 presents the research questions, methods & variables, and important findings from all the three essays at a glance.

### *Essay 1: Work Structures of Open Source Projects: Examining the Influence of Superposition on the Success of Projects*

|  |  |
| --- | --- |
| Research Question | Problem formulation:  Research question: |
| Hypotheses | Theoretical foundation:  Hypotheses: |
| Methodology | Measures: |
| Analysis | Empirical model:  Unit of analysis:  Main findings: |
| Contributions |  |

### *Essay 2: Team Composition and Governance of Open Source Projects: Examining the Influence of Source Code Access Restrictions on the Sustenance of Projects*

|  |  |
| --- | --- |
| Research Question | Problem formulation:  Research question: |
| Hypotheses | Theoretical foundation:  Hypotheses: |
| Methodology | Measures: |
| Analysis | Empirical model:  Unit of analysis:  Main findings: |
| Contributions |  |

### *Essay 3: Ideologies in Open Source Communities: Examining the Influence of Ideological Shifts on the Relationship between Work Structures and Project Outcomes*

|  |  |
| --- | --- |
| Research Question | **Problem formulation:**  **Research question:**  How have the ideological shifts invoked by (a) the emergence of permissive licenses, and (b) the shift towards organizational ownership, transformed the influence of FLOSS work structures on project outcomes? |
| Hypotheses | Theoretical foundation:  Hypotheses: |
| Methodology | Measures: |
| Analysis | Empirical model:  Unit of analysis:  Main findings: |
| Contributions |  |

# Essay 1

# Essay 2

# Essay 3