Agile software development: Adaptations undertaken by global software services engagements

Abstract

The purpose of this research work is to examine the constraints faced by firms operating in the global software services (GSS) industry while executing agile software projects and study the nature of adaptations undertaken. GSS engagements are characterized not only by the globally distributed nature of these engagements, but also due to the "outsourcing" and "services" nature of activities undertaken. Additionally, the context in which the GSS firms operate including the labor practices, the nature of project staffing, the type of the engagement contracts, the process maturity of the GSS firms and the nature of client engagements also influence the execution of software engagements undertaken by these firms.

We draw upon critical realism (CR) as a philosophy and affordances as the theoretical lens for analyzing the constraints and the resulting adaptations in executing agile projects by GSS firms. Guided by these theories, the approach adopted is to understand the "generative mechanisms" through which the agile software development (ASD) methods operate and to identify the affordances they offer to software teams operating in a GSS environment. Considering the need for examining the phenomena in its natural setting, the research design incorporates a longitudinal case-study of an outsourced product development engagement followed by multi-site case-studies of large outsourcing engagements. The single-case holistic study enables us to understand the generative mechanism of ASD methods and the affordances offered by agile methods to IT services teams. The multi-site case study then analyzes a set of large engagements within a single organization using the constructs of generative mechanisms.

This study illustrates the mechanisms through which ASD methods operate. These can be summarized as a) Groom and Converse, b) Iterate and Increment, c) Showcase, Inspect and Retrospect, and d) Aggregate and Collaborate. This study is among the first to analyze software development methods using a critical realist philosophy and demonstrates how adaptations occur in response to the affordances offered by development methods to software teams. Past research on agile methods use in global software development have focused on the adaptations necessitated as a result of the global nature of the work. Our study views agile projects from a GSS firm's perspective and illustrates that many of the adaptations undertaken are not just to overcome the constraints

imposed by the global nature of the engagements, but are also aimed towards enhancing the predictability of software development.

In addition to providing insights on ASD use by GSS firms, this study also contributes to IS literature in several other ways. This study is a first in applying affordances theory for studying software development projects and highlights the practical implications of studying affordances and its actualization. A methodological contribution of this study is in combining critical realism and affordances for conducting IS research.