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The customer effect in agile system development projects. A process tracing case study

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Abstract

The success of an agile system development project is dependent on many factors, including the customer organization's ability to collaborate with and support the development team. This support consists not only of a single project owner or an on-site customer, but involves several stakeholders in the customer company, and the attitude and focus of the whole customer organization towards the project will influence project success. In this case study a customer organization's involvement in an agile system development project and the consequences of the customer and the development teams' collective behavior are analyzed. A process tracing research method is applied, aiming to identify causal chains in the project's progress towards a partly unsuccessful final delivery combined with an accepting customer. The analysis shows that in this case, main causes for low delivery rate are an unprepared customer and a large initial project scope. On the other hand, the agile project organization and good communication ensure an involved customer that still has expectations for the project.

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Keywords: information system development; agile project management; customer involvement; process tracing; case study

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1. Introduction

The customer has a prominent role in agile system development projects, with customer participation ensured through many prescribed practices, techniques, and tools. The main perspective is that unclear and volatile requirements are managed by frequent or continuous involvement of the customer in the system development process. Martin et al. have shown that many information systems development (ISD) customer representatives enjoy working agile, and customers have developed a variety of practices and roles that enables them to do the job in a productive manner[1]. However, Hoda et al. have found that many agile development teams meet customers who are not able to participate in agile teamwork in the prescribed manner[2]. Ramesh et al. find that low stakeholder ability and concurrence is a main problem in agile requirements engineering[3].

There is a distinction between customer and user in ISD projects, but user participation is more studied than customer participation[4,5,6]. However, customer participation as it is understood in agile is often related to user participation or user involvement (see for instance the list of agile methods in Dybå et al.[7]). Thus, many of the findings on user participation transfer to customer participation in agile methods. It is verified in meta-studies that the user participation actually increases system success[8,9], and that much of is this is due to user involvement (the user's level of engagement in the project)[9]. Note that these meta-studies include reports with the agile customer as a kind of user.

Although we have knowledge about overarching variables relating user and customer participation to system success, there is still a gap in our deeper understanding of how agile methods and the customer's and/or user's participation influence ISD projects, as we need to identify the mechanisms that lie behind these variables, and how these mechanisms contribute to the final outcome. This problem is the main focus in the case study presented here, where we study a Norwegian company aiming to develop new computerized support for its field workers.

In the next section, we present a description of research on customers and users in system development in general and agile methods in particular. Then in section three an introduction to process tracing, a qualitative case research method, is given. A description of the case is provided, before we delve into the process of establishing and testing hypotheses using qualitative data. The discussion section summarize the results, reflects on the research approach, and presents ethical considerations taken.

2. Customers and Agile Software Development

Customer participation in agile development projects is not studied extensively if we search beyond Ramesh[3], Martin et al's1, and Hoda et al's work[2]. However, there is a significant number of studies focusing on the user's ability to influence ISD. A couple of recent meta-studies[8,9] verify that user/customer participation and/or involvement have positive impact on system success. One of the studies also include a collection of user or customer participation practices found in software engineering projects, documenting a large variation on how user participation is managed[8]. Cavaye also analyzed a collection of user participation studies[4]. She defined dimensions of user participation, and further identified contingencies that influence the contribution of user participation to system success. She organized contingency factors in three groups: organization variables, project-related factors, and project complexity. Her argument is that effects of user participation is not a direct bivariate, but highly dependent on these contingency factors, and that understanding their effect is essential.

Bano & Zowghi's meta-study also identifies main factors that influence the value of user participation[9]. This understanding is further deepened in a longitudinal case study where focus is on how user satisfaction, indicating system success, evolves as the contingencies of the project are changing[10]. The mentioned case study indicate causes of system success by identifying events and project features that contribute to user satisfaction.

It is the aim of this work to develop Bano et al.'s[10] ideas further by focusing on how the actual instantiations of theoretical concepts interact to give a final project outcome. What do these theoretical concepts actually mean in a real project? How do they actually influence the project flow, and contribute to create the outcome? In this work, contingencies would be the main study object, and how they cause situations and effects that contribute to system success would be the outcomes.

3. The Process Tracing Method

Process tracing is a research method aiming to understand the causal flow of events in a process, originating in