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Exploring External Leadership in Agile Software Development Teams and its Influence on Team Empowerment

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ABSTRACT

Agile software development (ASD) practices are used in a variety of contexts nowadays, transforming not only IT departments but entire organizations. One of the preconditions for ASD to be successful is that the teams are empowered: they self-organize and act autonomously, thereby taking on traditional management tasks themselves. Hence, the role of traditional managers changes extensively to a more hands-off, enabling management style. With agile teams emerging in large numbers, organizations need to give guidance to external team leaders – managers without a designated position in an agile team – who struggle to find their role in the new environment. If those managers do not take part in the transformation or openly oppose ASD, it can negatively influence team performance. We propose a case study-based research design to develop a theoretical model on the interplay between agile teams and external team leaders and its influence on the teams' empowerment.

Keywords

Agile software development, empowerment, team-external leadership, management.

INTRODUCTION

In a continuously changing environment, *agile software development (ASD)* methods have been created to support a team's ability to "rapidly or inherently create change, proactively or reactively embrace change, and learn from change" (Conboy, 2009). Building on those methods, agile approaches have shown their ability to foster innovation, creativity, and learning (Dybå & Dingsøy, 2008; Laanti, Salo, & Abrahamsson, 2011), and, thus, they are regularly applied even beyond the IT context and small organizations (BitkomResearch, 2018; VersionOne, 2018). To be able to respond in a timely manner, agile methods rely on one key component: *empowered teams* that comprise all skills necessary to solve a given problem, self-organize, and have authority to make decisions about their product autonomously (Cockburn & Highsmith, 2001). The shift from traditional waterfall methods to ASD and empowered teams may require fundamental changes to management and governance processes and structures (Birkinshaw, 2018; Gerster, Dremel, & Kelker, 2018; Van Waardenburg & Van Vliet, 2013) because agile teams take on traditional management responsibilities such as planning, prioritization, or stakeholder management themselves. The transformation requires time and resources, and should not be neglected because empowerment constitutes an important precondition for agile teams to be successful (Moe, Dingsøy, & Dybå, 2010). But despite huge investments into training, coaching, and change management, many organizations have not yet been able to increase their ability to sense and respond to change by implementing agile teams (Laanti et al., 2011; McGregor & Doshi, 2018).

A shift in management culture is connected to ASD to truly empower autonomous and cross-functional teams, where managers focus less on command-and-control and instead foster self-management and development, and give teams direction and purpose (Bonner, 2010; Dikert, Paasivaara, & Lassenius, 2016; Parker, Holesgrove, & Pathak, 2015). Nevertheless, most agile frameworks and recommendations do not go into detail on the role traditional managers play in a team, but rather focus on how people work within the team (Cockburn & Highsmith, 2001; Highsmith & Cockburn, 2001). Thus, adapting to the new circumstances is especially challenging for *team-external leaders*: managers, such as team leads, functional managers, and other affected leadership personnel who are connected to agile teams but not involved in the team's day-to-day work in a designated role, e.g. as a product owner. Since they struggle to find a place in the new system, these managers are often more reserved and critical towards ASD and agile

methods (Drury-Grogan & O'Dwyer, 2013; Shastri, Hoda, & Amor, 2017). Managers' opposition is a threat to the success of agile teams, which relies not only on management acceptance but active management support (Dikert et al., 2016; Dybå & Dingsøy, 2008; Nixon, Harrington, & Parker, 2012). As Dikert et al. (2016) concluded, "[m]iddle management is in a position to undermine the entire transformation, and may do so if they do not participate in, and thus understand, the agile method".

Even though there has been substantial research in the past on how empowered teams manage and lead themselves through distributed or shared leadership (Hoegl & Muethel, 2016; Moe, Dingsøy, & Øyvind, 2009), neither the consequences of adopting ASD for traditional managers nor the precise actions that they take on as external leaders interacting with agile teams have been analyzed in detail. Prior research is scarce on the ways in which external leaders interact with empowered teams, especially if several external managers are involved (Rapp, Gilson, Mathieu, & Ruddy, 2016). We follow the call of Rapp et al. (2016) to further investigate the ways in which certain characteristics and behaviors of managers facilitate team empowerment and why others do not. As a result, this study concentrates on answering the following research questions:

RQ1. How do members of ASD teams and team-external leaders interact?

RQ2. How do team-external leaders influence an ASD team's empowerment?

This study seeks to perform an in-depth case study of teams in an ongoing agile transformation within one large organization to understand the interactions between ASD team members and their external leaders in the first place. Those interactions then will be analyzed with regard to their influence of team empowerment.

The remainder of this paper is structured as follows. First, the existing literature on ASD and its implications for team empowerment as well as the management of empowered teams is presented. Next, the proposed research method for this study is described in detail. Lastly, the expected outcomes of this research project and its contributions to theory and practice after the study's completion are summarized.

RELATED WORK AND THEORETICAL BACKGROUND

Agile Software Development

Agile methods such as Scrum or eXtreme Programming are nowadays common for developing software (Baskerville, Pries-Heje, & Madsen, 2011; VersionOne, 2018). They have essentially been developed to counteract the shortcomings of traditional software development (Beck et al., 2001; Highsmith & Cockburn, 2001) such as limited opportunities to adjust to changes and to integrate feedback (Mahadevan, Kettinger, & Meservy, 2015). The concept of "agility" in terms of business or organizational agility had been explored by management research earlier, but the term became widely known when leading practitioners formed the Agile Alliance (Beck et al., 2001) and established agile concepts in the software development domain. The members of the alliance espoused their ideas in an "Agile Manifesto", summarizing the foundations of agility as a more light-weight approach (Beck et al., 2001). Accordingly, in ASD (1) individuals and interactions are more important than processes and tools, (2) working software matters more than comprehensive documentation, (3) customer collaboration should be preferred over contract negotiation, and (4) responding to change surpasses following a plan (Beck et al., 2001). The basic mechanism for problem solving in agile methods is a *cross-functional team* that comprises all skills necessary to deliver true value to the customer. Those teams, ideally suggested to be made up of intrinsically motivated teams of equals, work in short iterations, get feedback as soon and often as possible, and use this feedback to continuously improve both the product and their team processes (Beck et al., 2001). One aspect of agile teams that is often overlooked or ignored is the necessity of *empowering* an agile team, providing both autonomy and purpose (Cockburn & Highsmith, 2001). Only when the team has decision-making authority for problems within its domain, the team can be as responsive and adaptive as needed while taking on responsibility for the problem itself (Moe, Dahl, Stray, Karlsen, & Schjødt-Osmo, 2019; Moe et al., 2010; Moe, Dingsøy, & Øyvind, 2009).

Empowerment of Agile Software Development Teams

Empowered teams have been around long before agile methods became popular, starting in the 1950s when Trist and Bamforth (1951) published their research on self-organizing coal miners. Kirkman and Rosen (1997) have described the four characteristics of empowered teams: (1) potency (the collective belief of a team that it can be effective), (2)

meaningfulness (the team's belief that its tasks are important and valuable), (3) autonomy (the degree to which team members experience freedom, independence and discretion), and (4) impact (the team's work is significant and important for an organization) (Kirkman & Rosen, 1999). While some scholars use the terms *self-organizing* or *autonomous teams* synonymously (e.g. Moe, Dingsøyr, & Dybå, 2008), empowered teams are not only managing themselves, but the construct of empowerment goes beyond that: teams need to know the purpose and implications of their work to feel a sense of empowerment (Kirkman and Rosen 1997). This is an important additional characteristic of teams that presumably can be influenced by management personnel. Hence, we take on the broader definition of empowered teams for this study. In addition, we argue that this broader definition of empowerment reflects the ideal ASD team better. According to the Agile Manifesto (Beck et al., 2001), not only do “[t]he best architectures, requirements, and designs emerge from self-organizing teams”, but also do teams need to know that they contribute to the “highest priority [of an organization, which] is to satisfy the customer”, which gives a team purpose and, consequently, noticeable impact. Thus, we consider agile teams a sub-category of empowered teams.

Prior research has shown that team empowerment is positively related to a variety of desirable outcomes concerning team performance such as productivity, proactivity, and customer satisfaction. In addition, team empowerment positively influences attitudinal variables, for example, job satisfaction, organizational commitment, and team commitment (Cheong, Spain, Yammarino, & Yun, 2016; Kirkman & Rosen, 1997; Mathieu, Gilson, & Ruddy, 2006; Maynard, Gilson, & Mathieu, 2012; Maynard, Mathieu, Marsh, & Ruddy, 2007; Moe et al., 2008; Moe, Dingsøyr, & Dybå, 2009; Parker et al., 2015). Nevertheless, empowerment can also have negative effects if empowerment initiatives overwhelm employees. For example, specific empowering leadership behaviors can increase job induced tensions (Cheong et al., 2016). Especially if team empowerment is illusory, or heavily limited by existing organizational processes and structures, empowerment initiatives can also enhance cynicism (Brown & Cregan, 2008). That is not to say that empowering teams is a non-beneficial endeavor in itself, but that organizations need to be very careful in the process because changing power dynamics can easily create tensions and produce unintended outcomes of empowerment initiatives (Baarle, Dolmans, Bobelyn, & Romme, 2019).

There are structural, processual, and cultural factors that facilitate or hinder the emergence of empowered teams. For example, high specialization and the resulting division of labor are a major challenge, especially if the specialization leads to highly siloed organizational structures (Moe et al., 2008). Also, high specialization often supports high individual autonomy, which is again potentially problematic for empowered teams: while team autonomy is an important characteristic of an empowered team, it decreases individual autonomy because the team makes most of the decisions instead of the individual (Moe, Dingsøyr, & Dybå, 2009).

Management of Agile Software Development Teams

As Highsmith & Cockburn (2001) have stated, ASD relies on “a world view that organizations are complex adaptive systems [...], in which decentralized, independent individuals interact in self-organizing ways,”. Those characteristics are at odds with traditional command-and-control management in large and long-established enterprises, where structures and processes have grown for decades, and hierarchies and bureaucracy have been established (Uhl-Bien & Marion, 2009). But while empowerment is a crucial characteristic of agile teams, alignment and coordination with other teams and the overall organizational strategy need to be ensured at the same time (Moe et al., 2019; Vidgen & Wang, 2009). This is where managers come into play. We suggest that over time, their role will change, and the number of managers will likely decrease, but there is still “management” and “managers” in agile environments.

The differentiation between *leadership* and *management* is important to understand the shift that occurs. While some researchers view leadership and management as the same (Zaleznik, 2004), others think that leadership is one aspect or sub-category of management (Mintzberg, 1973), or even an entirely separate concept (Kotter, 1990). The two concepts are hard to define strictly separately from each other (Hunt, 2004). While associated activities such as “initiating change”, “giving directions”, and “motivating team members” are closely related to the notion of leadership, the operational implementation – meaning “planning”, “organizing”, and “controlling” – is often more narrowly defined as management. In traditional leadership studies, the two basic styles – transactional and transformational leadership – emphasize those different managerial characteristics. Nevertheless, they have a central assumption in common: there is a single person in charge of a number of subordinates. Managerial responsibilities do not necessarily need to be filled by one person, traditionally a project or team lead. Concepts such as *shared leadership* – that is closely intertwined with agile project management (Dombrowski and Mielke 2013; Parker et al. 2015) – describe the shift “from traditional managerial hierarchies [...] to “thick networks of relationships”” (Hunt 2004, p.

27). No single person has the inherent power to make the decisions based on organizational hierarchies, but specialized knowledge in a particular issue allocates leadership (Moe, Dingsøy, & Øyvind, 2009). Accordingly, team members should share decision-making authority while acknowledging that their influence on a specific decision is dependent on their experience and knowledge in the domain of the problem (Hoegl & Parboteeah, 2006).

In this scenario, external leaders are expected to “generally refrain from interfering in team-internal operational decisions” (Hoegl & Parboteeah, 2006). Prior research suggests that external team leaders’ behavior can potentially hinder ASD team empowerment: for example, low external autonomy, which describes the degree to which external leaders refrain from influencing the team’s activities, is a major barrier for team empowerment (Moe et al., 2008). In addition, recent studies indicate that not only the management style but also the manager’s prior role and relationship to the team influences team empowerment. For example, team coaches – facilitating the team’s work without being involved in the actual execution and often having no prior relationship to the teams – are in a better position to positively influence team empowerment, and in turn team performance, than external leaders, whose behaviors show no significant influence (Mathieu et al., 2006; Rapp et al., 2016).

The managers’ responsibility is to create conditions for empowered teams to work effectively, self-organize, and continuously improve. Prior research has identified governance mechanisms that managers still can use in an agile setting, and has called for further research on how these findings apply in different contexts (Lappi, Karvonen, Lwakatare, Aaltonen, & Kuvaja, 2018). Others have defined management roles in broad terms as, for example, “mentors”, “coordinators”, “negotiators”, or “process adapters” (Shastri et al., 2017) or formulated guiding principles of agile leadership such as “setting the direction”, “establishing the simple, generative rules of the system”, or “encouraging constant feedback, adaptation, and collaboration” (Parker et al., 2015). It remains unclear, however, how these roles and principles translate to organizational structures and management roles in practice.

PRELIMINARY RESEARCH DESIGN

Research Approach and Method

We propose an *exploratory multiple-case study approach* (Sarker, Xiao, Beaulieu, & Lee, 2018). This is well-suited for this study because it allows for collecting rich information on a problem in its real-world context in order to create new theory (Eisenhardt, 2011; Yin, 2009). Our objective is to arrive at new insights in the interplay between ASD teams and team-external leaders, and its effect on team empowerment. We focus on a single case organization, which is undergoing an organizational transformation and adopting agile teams. This presents a unique opportunity to investigate our research questions with a critical case, with extensive access to internal data and teams, as well as the possibility to collect longitudinal data. The unit of analysis is the team. For this study, data will be collected from several teams, which all operate within the case organization. In this way, variations that result from external (e.g., environment or market influences) or internal factors (e.g., overall organizational structure, processes, or culture) can be controlled for (Lee, 1989).

Case Selection

The case organization is a German insurance company (hereafter referred to as INSUR) with approximately 9,000 employees. The company has started to introduce agile methods – namely Scrum, Kanban – more than two years ago. Today, more than 40 teams officially follow an agile method, mainly in the IT and product development units, but further units increasingly start to adopt agile practices (e.g., retrospectives or daily stand-ups) as well. Most teams have started working with agile methods after the CIO announced a mandatory shift for large parts of the IT department in January 2019. At the same time, team lead roles have partly been eliminated within the IT department and a new management role has been established: as external leaders, so-called “IT managers” have disciplinary control over members of two or three agile teams and have responsibilities such as yearly reviews, resource allocation, or employee development, but they are not involved in operational or functional team decisions. Thus, the new role of the IT manager operationalizes a form of team-external leadership in the IT department that differs from the business departments. The selection of teams in the resulting multiple-case design follows a combination of literal (conditions of the cases lead to predicting the same results) and theoretical (conditions of the cases lead to predicting contrasting

results) replication logics (Dubé & Paré, 2003) to analyze the different managerial setups in which the agile teams operate.¹

Data Collection

The different sources of evidence being collected will serve as converging lines of inquiry, allowing for triangulation of the different perspectives on the question how team-external managers influence agile teams at INSUR (Yin, 2009). These sources include:

- (1) internal documents and intranet data such as internal communications, current and previous organizational charts, training material and documentation as well as strategic presentations and documents,
- (2) observations from attending team events such as sprint plannings, reviews, daily stand-up meetings, or retrospectives, and shadowing the team over a predefined time-period, and
- (3) semi-structured interviews. Those include:
 - (a) group interviews with all team members to establish a common understanding of the project team setup, goal and work processes as well as an overview of management personnel who interact with the team, and
 - (b) (4) semi-structured individual interviews². The interview participants are team members and their respective disciplinary supervisors – IT managers or traditional functional managers –, as well as other stakeholders of the team (e.g., senior management). The interviews will cover interactions between a team member and his or her peers, stakeholders, and functional supervisors.
- (4) Subsequent to the interviews, participants will be asked to fill out a survey to assess the perceived team empowerment (Kirkman & Rosen, 1999; Kirkman, Rosen, Tesluk, & Gibson, 2004) and empowering leadership (Ahearne, Mathieu, & Rapp, 2005).

Data Analysis

For building new theory, we will start with pre-defined a priori constructs (Eisenhardt, 2011) such as team empowerment. Coding using computer-assisted qualitative data analysis tools will be used to analyze the data. Specific guidelines for theory development and data analysis in exploratory research will be followed (Eisenhardt, 2011; Miles & Huberman, 1994). For example, the coding will be performed using atlas*ti and by at least two researchers. After describing and analyzing the results from the focus groups, single informants and observations, the cases will be generalized in a cross-informant analysis by moving from a concrete informant to the totality beyond the individual informant. Moreover, data will be contrasted and compared with quantitative results from the questionnaires. Key informants will review draft case study reports and explanations. This will result in a theoretical model that describes and explains the interplay between agile teams and team-external leaders, with a corresponding set of testable assumptions and propositions.

EXPECTED OUTCOMES AND CONTRIBUTIONS

In the next step, suitable ASD teams meeting the sampling requirements at the case site will be identified that can be analyzed for this research project. Simultaneously, the concepts on team empowerment, team performance, and external team leadership will be operationalized as a priori constructs to be used in the interview guideline development. The actual data collection will start after that, presumably within the next two months, followed by the analysis of collected data. The interview guidelines and potentially more structured questionnaires and surveys will be refined based on initial results. We expect the data collection and analysis phase to last until approximately May 2020.

This study aims to shed light on our understanding how management changes in the presence of empowered teams that use ASD approaches. We draw on literature from management and organizational sciences to consolidate advances on leadership literature, especially shared and empowering leadership, and team empowerment research with

¹ For details on the team selection see <https://osf.io/5zhr2/>

² For a first draft of the interview protocol see <https://osf.io/4qd8m/>

the research stream on ASD. We aim to provide a model of interactions between ASD team members and external team leaders and identify factors that influence whether a manager is perceived as increasing the team's empowerment. Changes of organizational roles and structures will be considered in this analysis.

This study is the first part of a larger research project. The study seeks to identify structural and behavioral factors of management and individual managers that facilitate team empowerment. As a follow-up, we try to establish causal relationships between those characteristics and team empowerment through a quantitative study as feasible. The case organization is willing to take part in further studies to improve its transformation efforts over at least the next three years. In addition, a multiple case study with further organizations in the financial sector that pursue similar agile transformations is possible and supported by the case organization.

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