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Control In Agile IS Development Projects: Looking Beyond Agency Theory

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Abstract

Information systems development (ISD) project control has been traditionally seen as a tool against agency concerns, i.e. to align the interests of project participants with the organization's interests. However, this perspective barely fits into the agile worldview. Agile methods, that became popular choices for ISD projects, shifted away from the commander role of project leaders, and propagate the importance of collaboration and facilitation. Therefore, it became ambiguous why project managers of agile ISD projects engage in control activities. This qualitative study employs the "Gioia method" to investigate managerial reasons for these exercises and draws attention to the range of problems and needs these procedures can address. The analysis found that control mechanisms are enacted not only due to agency concerns, but also to enhance cooperation and communication, to signal to senior management and to become isomorphic with other projects.

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1. Introduction

Information systems development (ISD) projects are complex by nature. Work processes are non-routine and intangible, work outcomes are difficult to measure, and requirements may continuously be revised due to changing business processes and unforeseen technical obstacles [40]. Managers use project control to cope with these issues, which is typically defined as an attempt to ensure that the behavior of project participants is aligned with organizational objectives [27]. Despite these steps, ISD projects often fail: the Standish Group's study found that only 29% of such projects are considered successful [47].

Success rates are not much higher in agile projects either: according to a review by VersionOne, only half of agile ISD project leaders consider the majority of their projects successful [50]. This relatively low ratio can be a consequence of the difficulties related to controlling agile projects. On the one hand, it is a fundamental part of a manager's job to align subordinates' interests with managerial goals and to continuously motivate team members to do their best [5]. Conflicts of interests could arise, for instance, from the amount of efforts employees make to participate in agile practices, such as in pair programming and user story creation [29].

On the other hand, in agile ISD projects responsibilities are set up in a way that protects participants from a disproportionate extent of management control [43]. In line with this, Highsmith and Cockburn note that "Agile companies practice leadership-collaboration rather than command-control management", and that "…agility depends on trusting the individuals to apply their competency in effective ways" [26]. In addition, a significant part of agile literature sees agile as a facilitator of collaboration [59]. Moreover, agile projects are marked by autonomously working teams. Autonomy is essential for responding to change in a timely manner, but endless discussions and slow decision making may have adverse effects on the development process [18].

Consequently, it is arguable that control mechanisms in agile ISD projects may target problems and needs that are unrelated to aligning interests of project participants to the interests of the organization. To date, empirical research on why control activities take place in agile ISD projects is scarce. A literature review conducted by [54] brought into light that control is almost exclusively defined from an agency perspective. Besides, secondary case analyses by [41] and [54] identified two reasons for control practices in ISD projects: (1) for aligning the interests of participants with the interests of the organization and (2) for creating value through communication and coordination. Focusing on value creation rather than aligning interests certainly fits the agile philosophy better [59], but the examined ISD projects used various methods; hence the validity of findings related to agile ISD projects remained unclear. In addition, the secondary data these studies used made it difficult to clearly differentiate between the reasons for control activities [41]. It also remained obscure whether managers have further reasons to enact control mechanisms.

Practically, the study aims to explore the different problems and needs that can be addressed in agile ISD projects through control activities and draw controllers' attention to these. This is important because there can be a misalignment between the purpose of control and the way it is enacted in terms of the chosen control modes and control styles. For example, it seems counterproductive to employ formal controls in a highly authoritative style when the purpose is to enhance communication and cooperation between parties, because such controls can be "costly": they cause negative socioemotional effects, such as stress and burnout [8]. To investigate the matter, an interpretive case study [36] has been carried out in a Danish container shipping company, in which a number of agile ISD project participants have been examined. From a theoretical perspective, this paper investigates whether the validity of existing theories on control purposes (see in e.g. [41]) also holds in agile settings, and seeks to explore potentially applicable further theories. Therefore, this research poses the following research questions: Why do managers perform control in a large, international organization applying agile as a standard in ISD projects (i), Which theoretical explanations relate best to these reasons? (ii) In the following, first the ISD project control literature is reviewed. Then, the research methods and the environment where the study took place are described. Next, the findings are presented, and the contributions of this work are discussed. Finally the limitations and concluding thoughts are introduced.

2. Theoretical background

2.1. ISD project control characteristics

Broadly speaking, control is an effort to influence the behavior of others to achieve goals [48]. Accordingly, one can define ISD project control as "an attempt to intentionally affect the behavior of another person or group as a means to achieve goals related to designing, developing, operating, using, and managing information systems." [8][9][10]. There are three main features of control: first, it is manager centric, studies on bottom-up and peer to peer control are rare. Second, it is goal-oriented, it is enacted with specific aims. Third, it covers a broad variety of practices, called control mechanisms, that can be categorized in different ways [31]. Examples of these practices and their classifications are present in a number of articles, for instance in [39], [45] and in [46]. In IS context, control focuses both on the relationships among organizational actors and on technologies, e.g. software applications, in which it is embedded [38].

Most ISD projects consist of multiple hierarchical layers [52], and control is typically regarded as a dyadic relationship between a controller and a controlee. Controllers are those who implement control and are mostly managers, for instance, IT project managers. Controlees are their subordinates, usually programmers, analysts and testers. Controllers can choose from a wide variety of control mechanisms. These are specific actions, and they define who will do what and when [53]. Control mechanisms can be categorized into different control modes. Control modes can be further classified as formal and informal. Formal control modes are input, behavior and outcome controls, and they clearly describe expectations from controllers. Informal control modes are clan and self-control, and they operate by creating shared values and norms [25] [40] [52].

A growing body of literature deals with control in agile settings, e.g. [16–18, 33]. Several distinct methodologies exist within the agile world, such as extreme programming and Scrum, but they share many common features. These include a smaller emphasis on documentation, iterative development, close and informal collaboration and preference for self-organization and reflection [17]. From a control perspective, an important trait is the empowerment of project teams that have the freedom to make decisions and, thus, project managers take a supportive role rather than a directive one [54]. Specialties of Scrum include daily Scrum meetings, where team members give short status updates, user stories that provide a general picture of the required features of the software, and backlog creation for listing pending requirements. The Scrum method also defines roles, such as the product owner, who acts as the voice of the business department, and the Scrum master, who makes sure that agile practices and values are kept [12]. Agile projects tend to rely on informal control, as this provides higher autonomy to the team than formal control. Two frequently used control modes in agile projects are clan control, embodied in agile ceremonies, and self-control, to provide freedom to team members to reach objectives their own way [18].

2.2. Reasons to control: agency theory and stewardship theory

In and outside the domain of IS, control is most often defined and seen through the agency lens [3], [54]. To clarify, I do not claim that IS project control literature did not emancipate itself from agency theory at all. For example, the concept of self-control, that assumes that controlees can control themselves, has been presented by [27], and it is an important aspect of control research to date. Nevertheless, due to agency theory's prevalence in control literature, it is necessary to summarize its key concepts. As per this theory, one party, called the principal, employs another party, called the agent, due to the principal's belief that this relationship derives higher value creation than working alone. Both parties are considered self-interested utility maximizers [56]. The agency problem is the result of two things: the interests of the principal and the agent are not aligned and that information asymmetry exists between parties. Interests are different in two ways: first, principals want agents to maximize their efforts, but agents prefer the opposite. Second, principals would like agents to bear the risks of their work, but agents would prefer principals to assume all risks. These issues constitute the agency problem that principals want to reduce in a cost efficient way [2]. In agreement with agency theory, it has been concluded that one intention behind control is to focus on the problem of value-appropriation of controlees [14, 24, 41, 54].

However, looking at control only through an agency lens may blind researchers to see differences among the motivations of actors and among the different contexts in which control activities take place. [13]. [14, 41, 54] noted

that even if the interests of parties are aligned, there is a need to coordinate and communicate work due to task dependencies, and assumed that this need can be satisfied through control mechanisms. Relatedly, [41] created the concept of "control purpose" that is defined as "the intentions that underline the controller's choice and implementation of specific controls." There are advocates, for instance [54], who prefer complementing agency theory with stewardship theory. This theory has more generous assumptions about human motivations, and it does not consider any of the parties self-interested, rather collective serving, trustworthy, hardworking, intrinsically motivated and self-actualizing human beings. Consequently, the alignment of interests and monitoring agents are seen as unnecessary efforts, despite information asymmetry that this theory also assumes, but which is regarded as a potential for learning. In accordance with stewardship theory, it has been presumed that value creation, for instance through communication and coordination, may also be an intention behind control activities [14, 24, 41, 54].

3. Methods

3.1. Description of the study environment

This research has been conducted between October 2018 and May 2019 in a Danish container shipping company operating in the transportation and logistics industries. This enterprise offers shipping services, freight forwarding and end-to-end supply chain solutions. To increase customer intimacy and to save costs, the firm provides digital solutions to its customers, including a purchase experience similar to buying a plane ticket. Clients can instantly book, manage and track shipments, submit cargo information and pay online. For this, the company operates a customer facing website and numerous mobile applications. In addition to front end systems, the enterprise develops and maintains a variety of back-end systems too. A few years ago the department decided to convert itself into an agile organization; the Scrum method has been selected for the various ISD projects.

As described by the Scrum approach, ISD project teams work in sprints that start with a sprint planning meeting, where the project teams agree on the sprint backlog, and make decisions about who will do what in the next sprint. At daily Scrum meetings team members discuss how the work went the previous day and what their plans are for that day. At the end of sprints project teams hold demonstrations to business stakeholders about the new features they built. At retrospectives, team members review what went well and what should be improved in the following sprint.

Following the guidelines of Scrum, Scrum teams consist of programmers, testers, product owners (that are called business analysts in the company) and Scrum masters. One or more Scrum teams report to IT project managers. Oftentimes some of the roles are outsourced to vendors, and certain roles, such as enterprise architects and solution architects, are shared among Scrum teams.

3.2. Data collection

This research used an interpretive approach. In line with the interpretive traditions, epistemologically this paper holds non-positivism, or that facts and values are intertwined, and both are part of scientific knowledge. Ontologically this work draws on internal realism, meaning that reality is an intersubjective construction of shared human apparatus [51]. Interpretive case studies are common in IS context (see, for instance, the works of [1, 5] because they are good at answering how and why questions [57, 58]. [51] argues that interviews are the primary data sources of interpretive researchers, but [28] claims that data should be collected from multiple sources. Therefore, data was gathered not only from interviews but from e-mails conversations as well. The unit of analysis of the research was the individual, who worked in agile ISD projects situated in the research site. The research site has been chosen because of the usage of Scrum in all projects that made the agile ISD projects more homogeneous.

The interviewing procedure followed the guidelines of intensive interviewing, that is a flexible, open-ended and in-depth method that allows researchers to immediately pursue ideas that emerge from interviews [4]. Although interviews had a rather loose structure, they used the same interview protocol. Thus, key questions were identical in all interviews. Queries were quite general to avoid bias. Initial interview questions focused on collecting sociodemographic information and project description. Next, questions were posed to reveal issues related to project management, and whether any actions (control mechanisms) were performed as a response. Subsequent questions

aimed at uncovering the causes of these actions, and about respondents' perceptions about the effects of these activities. The interviews were finished by asking for potential additional interviewees.

As shown in Table 1, most interview participants worked as IT project managers, that is a typical controller role [53]. The sample also contained business analysts (controlees) because enacting control mechanisms due to agency concerns may not be a socially desirable behavior [19]. Consequently, controllers might have avoided talking about these concerns. Using business analysts as proxy subjects was one way to avoid this bias [37]. Therefore, controlees were asked about the possible causes of control mechanisms enacted by their project managers. The average length of the interviews was 55 minutes and were conducted with Skype for Business. All interviews were then transcribed.

In addition to interviews, e-mails written by the interview participants with controller role have also been collected for triangulation purposes. The recipients of these e-mails were their controlees. These e-mails were extracts from the so-called Steering Committee meetings, where project managers discussed with senior managers how they saw the project proceeding and the deadlines for future project deliverables. The e-mails were written between September 2017 and June 2018, and gave the opportunity to examine possible changes in the causes of control activities. However, the usage of e-mail communication as secondary data source was limited because determining the reasons for control activities often involved a great level of subjectivity from the researchers.

Table 1. Sociodemographic details of participants.

Nr.	Gender	Nationality	Role	Work experience
1.	Male	Bosnian	Project manager	5 years as business analyst and 5 years in the role
2.	Female	Croatian	Project manager	More than 8 years in the role
3.	Male	British	Business analyst	3 years in the role
4.	Female	Danish	Project manager	2 years in business analysis, 1 year in the role
5.	Female	Danish	Business analyst	5 years in the role
6.	Male	Portuguese	Project manager	2 years in the role
7.	Male	Algerian	Project manager	More than 10 years in the role
8.	Female	British	Business analyst	3 years in the role
9.	Male	Swedish	Project manager	7 years in the role
10.	Female	British	Project manager	5 years in the role
11.	Male	Italian	Project manager	8 years as business analyst, 2 years in the role
12.	Male	Indian	Project manager	3 years in the role
13.	Female	Brazilian	Business analyst	3 years in the role
14.	Male	Turkish	Business analyst	4 years in the role

3.3. Data analysis

The data analysis was conducted in Nvivo12 to where the transcripts and e-mails were uploaded, and it followed the "Gioia method" [7, 22, 23]. This method has already been used in IS research, e.g. by [30], and it is particularly useful for this research because it helps to understand lived experiences of interviewees [21]. The "Gioia method" has also been chosen due to its rigorousness, as it allows researchers to iterate between data and theory, that is consistent with the use of theory in interpretive research [51]. Finally, this method has been selected because it offers an elegant way of presenting findings [23]. Following the guidelines of the method, the analysis had two steps.

Step 1. First-order concepts have been formulated, that are representations of how interview participants viewed what was happening in the organization and the way they captured their meanings associated to them [32]. For this, the in vivo coding technique [42] was applied because at this stage the authors' own interpretations needed to be minimized.

Step 2. Similarities and differences among first-order concepts have been identified, and based on these they have been grouped into second-order themes. This step, that was already situated in the theoretical realm [23], had many iterations in which the authors shifted from first-order concepts to literature back and forth, and it also resulted in subsequent interviews that focused on the possible relationships among first-order concepts. The second-order themes were then further grouped into aggregate dimensions. The names of these dimensions were taken from literature [35, 41, 44, 54]. Once the first-order concepts, second-order themes and aggregate dimensions were identified, it was

possible to prepare the data structure shown in Figure 1. The data structure visually highlights the journey from the words of participants to key findings and this is fundamental for the rigorousness of qualitative research [23]. It is important to note that the "Gioia method" does not stop at this point, but its aim is to develop theory. However, this research stopped at drawing specific implications, and this goal is aligned with the chosen interpretive research approach. As a consequence, this paper highlights tendencies, rather than predictions, and it may provide useful insights for related research conducted only in similar contexts [51].

4. Findings

In this section, controllers' reasons to control their agile ISD projects in the technology department of Danish container shipping company are described. First, this is done by presenting the data structure (Figure 1), and then findings are illustrated with the help of quotations.
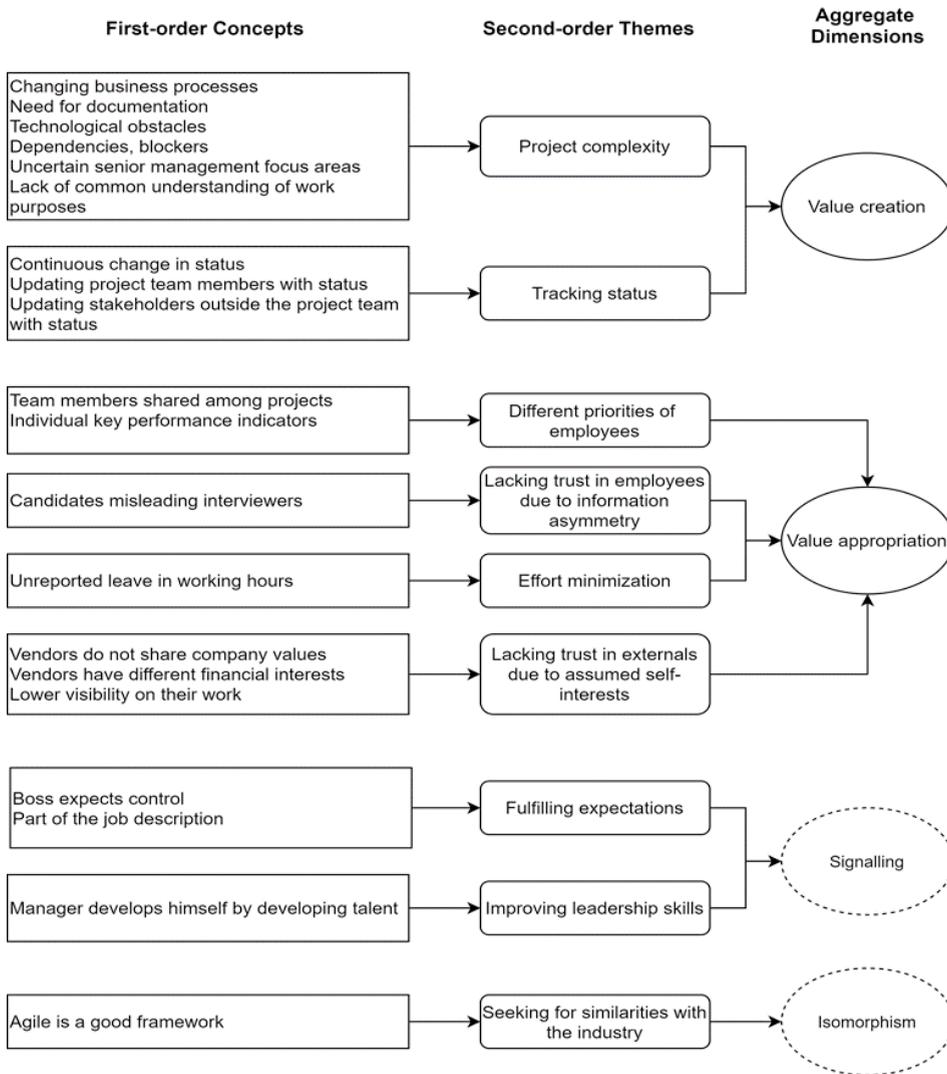

Fig. 1. Data structure

4.1. Control for value creation

Every respondent underlined that control activities were conducted because agile ISD projects were complex, and this complexity required continuous coordination. Complexity stemmed from a number of reasons. First, project participants worked in different geographical locations, and had diverse expertise areas. Second, building an information system posed numerous challenges, including changing business processes and technological obstacles. Third, the completion of one task of a project member often depended on a task of another project member. Fourth, the length and the team size required thorough documentation on who did what and when. Fifth, project participants tended to develop own way of thinking about the purposes of their work. Interviewees pointed out that control mechanisms, such as physical and virtual team meetings, one-on-ones, requirements and user stories could address the above mentioned concerns. They helped to create a common understating of everyday tasks and of the project as a whole. They also aided participants to be informed about the ambitions of the project.

Q1 (IT project manager): *Things would fall apart otherwise. Even if we would talk every day, if you don't ask the right question, things can fall apart. People are in different locations, in different environment, and own way of thinking can develop. They would not know the purpose of their work. So I have to make sure they know why they are working.*

Another reason to enact control mechanisms was that the status of the project was continuously changing, and status meetings were seen as forums where the status was communicated. Thus, project participants, including the controller, could update their knowledge about the stage of the project. Controllers were also required to give status updates to rest of the organization.

Q2 (Business analyst): *We do general project updates. From business side, has anything changed in the priorities? Also, updates from test team, and what are the BAs working on? [...] Are we all on the same page?*

Controlees were often portrayed as dutiful, honest and ethical and, thus, trust was an emerging theme among many interviewees. In addition, controlees were expected to enact self-control. Another interesting finding was that the word "control" sounded negative for many controllers, and they associated control with micromanagement, ordering people around and criticizing employees. As a consequence, many of them refused to say that they even control their projects.

Q3 (Project manager): *I never had this approach to control...micromanage, if you will... I never wanted to have a team where I was instructing people how to work.*

4.2. Control against value appropriation

The concern for company value appropriation due to self-interested controlees was expressed less often. Four common situations have been identified in which the primary reason to control was to cope with agency concerns. First, when some controlees were working on multiple projects of the company at the same time. This meant that controllers had to confront controlees if they did not prioritize or did not spend sufficient time on their project but on other projects instead. Consequently, in such situations controlees were still seen as employees whose interests were aligned with the company but not with the project. A somewhat similar situation was when different job roles within a project had different key performance indicators. While the overall project success was part of controlees' yearly evaluation, individual contribution was another critical component of their performance assessment. For instance, while a product owner was assessed based on the number of user stories prepared, the performance of a project manager was determined by how successfully they avoided cost overruns.

Q4 (IT project manager): *Progress would not happen. Because people have different priorities. Look at the solution architects, for example. They are not necessarily 100 percent allocated to my project. It could be that it is just one percent of their work. So I need a close follow up with them, otherwise there would be someone else asking for delivery from them. And they would prioritize that.*

Q5 (IT project manager): *Every single person will have different objectives. So these are never fully aligned. So we need to build bridges, and meet half way. I want to do things quickly, but the business side, business analysts may want different things.*

Second, controllers believed that the interests of some project stakeholders were not aligned with the company's interests. It was the case of outsourced agile ISD projects, controllers expressed that control mechanisms were in place against self-serving behavior of vendors. Third, during the hiring process of new project participants, controllers

enacted control because at this early stage of the relationship there was a lack of trust from the controllers' side, and they expressed that applicants may mislead them.

Q6 (IT project manager): *We set costs on deliverables. We created the scope for the vendor, and then created a set price contract for this vendor. It means if they are quick, they would have lower costs for themselves. They bounded themselves to the scope and not to time. So if they deliver slowly, they themselves will spend quite some resources, and also we sell the vendors that if they deliver well, there can be more work for them.*

Q7 (IT project manager): *Yes, people exaggerate at interviews, everyone. I take interviews and CVs with a grain of salt. I have a dialogue with HR, and look at the intelligence and personality scores, at interviews there is little time to get to know someone.*

Fourth, certain team members tended to leave the office earlier than they were supposed to. And while flexible working hours were allowed for employees, the manager felt that unreported leave is a sign of minimizing efforts.

Q8 (IT project manager): *…They just left, when I came by, I could see 2-3 people are not there, I asked where they are… then next morning they said we just left to go home.*

4.3. Signalling and isomorphism

The interviews and e-mails revealed two more reasons to enact control mechanisms. A common characteristic among these was that they could not be fully explained with either stewardship or agency theories. First, many controllers asserted that a reason to enact certain control mechanisms was that it was expected from them by their superiors. They believed that it was part of their responsibilities, and that more control was seen as better performance by senior management because the more information they had, the more credible they looked. Therefore, they used control as a signal that the project was in good hands. But signalling was also the reason to have one-on-one meetings between controlees and the controller. It was because controllers believed that these talks provided opportunities for controlees to highlight what they achieved. Reporting about these great achievements to senior management was favorable because it provided visibility for the project, controlees might have got wider recognition, and controllers also believed that this might have triggered even better performance from them in the future.

Q9 (IT project manager): *There are expectations towards my boss, so I need to make sure we follow some processes, even if I don't really like them. But it is part of work… it needs to be done.*

Q10 (IT project manager): *When people get recognized how well they did, they will do even better. And it's not just about me. It is also important for people outside [company name] and in senior positions to see what we did. So I encourage my team to do demonstrations to leaders. It is a way for them to showcase their work.*

In a similar fashion, improving leadership skills was also mentioned as reason to conduct control activities. It was because controllers saw themselves as better leaders if they developed talents. Moreover, as another instance of signalling, controllers believed that their superiors would have also evaluated them better, if they had developed talent.

Q11 (Business analyst): *He also has people reporting to him, so he develops himself as a leader, by wanting to develop talent. He wants to see people improve. He is good at promoting his people, and developing them. But it also makes him look better, right?*

Second, the agile framework and the different agile ceremonies were control mechanisms that were enacted because controllers believed that this was the best method to be followed for ISD projects. This was because managers thought that it is a proven method and it has been used already in a broad variety of companies. Hence, controllers assumed that using agile and the control mechanisms it brings provided more legitimacy to the project and also that they would look more professional. It was also interesting that some project managers claimed that they used agile because it was mandated by senior management. However, other sources reported that IT project managers had the freedom to choose their development methods. Therefore, because of normative forces to look professional and because of the coercive forces have been coming from senior management, IT projects became isomorphic, and all of them used the Scrum method and associated control mechanisms.

Q12 (IT project manager): *I am convinced that it [agile] is a good framework, evidence in the industry is present. We decided to use it as a team, that's why I am using it.*

5. Discussion

The research questions of this study were the followings: Why do managers perform control in a large, international organization applying agile as a standard in ISD projects (i) and Which theoretical explanations relate best to these reasons (ii)? Concerning the first research question, managers performed control activities primarily because of two reasons: to help value creation through facilitating communication and cooperation in the Scrum teams, and to minimize their agency concerns related to team members. However, two additional reasons appeared. First, the evidence of signalling became apparent, for instance control was a signal to senior management with the intention that the signalers, IT project managers would look better in the eyes senior managers. Second, controllers enacted the control mechanisms of Scrum because Scrum (and agile in general) has been seen an industry standard, and controllers wanted to follow professional norms. This also made projects look similar to each other (isomorphism).

Concerning the second research question, the study found that agency theory, related to value appropriation, can explain control mechanisms. It has also been discovered that self-interest, a central concept in agency theory, has two distinct variations in an organization where multiple agile ISD projects are running in parallel. A common view among controllers was that while controlees may not work for the best interest of a certain project, their self-interest is aligned with the broader interests of the organization. This could happen either because they worked on multiple projects at the same time and prioritized other projects or because they focused on their own performance based on their individual KPIs. Therefore, controlees were not depicted in a "classical" self-interested way as it is described by agency theory literature, for instance in the studies of [2] and [56]. This finding highlights that the different controls in the organization can be in conflict with each other, as it was also pointed out by [55]. In other situations (e.g. unreported leave from the office), however, controllers deemed that the controlees' self-interests did not serve either the project or the organization. Both views on self-interest triggered control mechanisms. Control literature mostly relies on agency theory to interpret control activities [11, 49], and this theory also has explanatory power in agile settings.

This study also showed that a reason to enact control mechanisms may not be to minimize the agency problem, but to create value through coordination and communication, as suggested by [41] and [54.]. Stewardship theory has the capacity to explain this finding. In fact, stewardship theory fits very well with the ethos of agile software development. For example, stewardship theory emphasizes mutual trust, aligned goals and intrinsic motivation as well as empowering structures and collectivistic behavior [13]. The attitudes of interview participants, were largely aligned with these beliefs. There is only one idea of stewardship theory that is not in line with the agile thinking, and this is individualism. Agile developers tend to be individualistic, especially millennials are likely do things their own way [20], while stewardship theory assumes stewards to be collectivistic. The data suggests that in the case organization controllers believed that while controlees might have one things the way they wanted, this way also served the collective purposes of the team.

While prior research on control purposes [14, 24, 41, 54] only considered agency and stewardship theories to explain the reasons for control activities, this study explored that also signalling and institutional theory may help to reveal why controllers enact control mechanisms. With regards to signalling theory, the analysis found that controllers looked at control activities as deliverables to senior management. Moreover, managers wanted to develop talent, so that they seemed better leaders by senior managers. On the one hand these imply that the dyadic controller – controlee approach to conceptualize control might be too narrow as suggested by [52], on the other hand, this is in line with the assumptions of signalling theory [6]. According to this theory, signallers try to reduce information asymmetry that occurs between the signaller (IT project manager) and the receiver (senior management) with the help of signals to develop trust from senior managers. It seems control and control effects can be used as signals to senior management, signalling that the project is doing well, and that it is led by a high performing project manager. Future research could examine whether signalling is a conceptually distinct reason for control activities from value appropriation because signalling theory shares a number of common assumptions with agency theory, such as information asymmetry and potential for conflict of interests.

Concerning institutional theory, results imply that controllers' autonomy to enact control mechanisms may be limited by regulations of, for example, senior management, and that controllers are also heavily influenced by professional norms, such as popular software development methodologies. Isomorphism, a key concept of institutional theory [15] may explain this finding. Presumably, if controllers feel external pressure to enact control mechanisms

then they prefer complying with these expectations, even if they had better ideas about how the project should be managed. This is what the theory calls coercive isomorphism. Coercive isomorphism in this context took place in order to make managers conform to the industry wide community of IT professionals.

In addition, even if senior management had given the freedom to IT project managers to choose control mechanisms autonomously, they might have been part of professional associations, and they might have received similar trainings as others in the broader IT project managers' community. These communities create norms that community members may wish to follow. Thus, similar ideas among the members of the community may diffuse. Institutional theory calls this concept normative isomorphism [34].

6. Limitations and conclusion

Beyond the general limitations related to qualitative research, there are two main drawbacks pertinent to this study. First, it was assumed that a certain control activity is enacted due to one specific reason. However, it may concurrently serve multiple purposes as mentioned by [54]. For example, the finding that control was seen as a method to improve leadership skills can also be subsumed under the value creation category and not only as an evidence of signalling. It is because it can be considered as a way of self-enhancement that also creates value for the organization. As a second limitation of this study, data was gathered only from one, or in some cases, two participants of each Scrum team. Therefore, the data are insufficient to be used for interpretations at project level. Future studies may wish to collect data from each member of agile projects that would make it appropriate to raise the level of analysis to project level.

To conclude, this study highlighted that there are multiple reasons in agile ISD projects to enact control mechanisms, and while it is stewardship theory that fits the agile philosophy most, agency, signalling and institutional theories can explain phenomena that remains unexplained by stewardship theory. The author encourages other researchers to extend or quantitatively test the findings, possibly by including new theoretical lenses introduced in this study.

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