Towards Identifying Information Systems Development Method (ISDM) Cargo Cult Behavior

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Abstract

Information Systems Development (ISD) organizations have been trying to adopt new approaches by transforming from one Information Systems Development Method (ISDM) to another, with a hope of reaching new strategies in their ISD process. This change is due to achieve faster deliveries, increase quality and respond to change iteratively. Previous research indicates cases with method deviations and method adoption failure. Reasons for this could be due to Information Systems Development Method (ISDM) Cargo Cult Behavior. This paper aims to, as a first attempt, test the ISDM Cargo cult type situation framework, by using data collected throughout observations and interviews in an ISD organization using agile methods. This study was able to identify six out of eight social actions that demonstrate an existing ISDM cargo cult behavior in an ISD team. This implies the possibility of using the framework to carry out such analysis.

Keywords

Agile, Adoption, Cargo cult, Information systems development, Information systems development methods, ISDM Cargo cult behavior, Software development

Introduction

Successful adoption of Information Systems Development Method (ISDM) is vital for achieving increased productivity and quality within Information Systems Development (ISD) organizations, and the field of Information Systems (IS) has a strong history of proposing ISDMs. Today we can see that ISD organizations face difficulties in their use of ISDMs (Gregory et al. 2016), which has been the case already since the 1960s (Avison and Fitzgerald 2003) when the software crisis appeared (Feller and Fitzgerald 2000). The difficulties ISD organizations face is to meet deadlines and the customers' requirements, some factors could be due to e.g. resistance to change or organizational culture (VersionOne 2018). In previous research, it has been shown cases where developers do follow the ISDMs strictly, but fails in their use, or not using any ISDMs at all, or deviate from its subscription (Avison and Fitzgerald 2003; Eloranta et al. 2015). Stray et al. (2016) studied ISD teams and how they conducted Daily Scrum Meetings (DSM), which deviated from the ISDMs initial subscription. Further, they provided guidelines for how to conduct DSMs. Some researchers discuss the importance of having a common knowledge about the ISDM and that there is no ISDM that will fit each project (Avison et al. 1998). Even though, ISD organizations adopt ISDMs they sometimes fail in their attempts (VersionOne 2018). An ISD team who does not follow the underlying rationale of an ISDM might end up having a cargo cult behavior. Mäki-Runsas et al. (2018) characterized an ISDM cargo cult behavior as when an ISD team adopts an ISDM but fails due to either non-rational or irrational social actions. They further explained that it could be situations when developers use an ISDM, but not understand the actual purpose of the ISDM, or misuse the practice without any rational reasons. So far, the analytical framework by Mäki-Runsas et al. (2018) has not yet been empirically tested and is only a conceptual idea. This paper aims to, as a first attempt, test the ISDM Cargo cult framework, by using data collected throughout observations and interviews in an ISD organization using agile methods.

ISDM Cargo Cult Type Situations

In this paper we test the analytical framework "ISDM Cargo cult Type situations" proposed by Mäki-Runsas et al. (2018). The framework has its foundation in Weber (1947) social action theory, interpreted by Kalberg (1980), and Ryan and Deci (2000) Self-determination theory, and the socio-anthropologist Worsley (1957) original description of cargo cult behavior. Mäki-Runsas et al. (2018) defined flawed use of an ISDM as misuse being either irrational or non-rational behavior. They described misuse to situations where ISD teams fail in their reasoning in relation to the value-based or means-end rational actions i.e. irrational behavior. In the cases where ISD teams act upon emotions (affectual) or stick to old habits (traditions), there is no reasoning behind the action, which they refer to being non-rational. In addition to the analytical framework of ISDM Cargo cult type situations, this paper extends the framework, see Figure 1. The extension consists of rational social actions, in order to have the possibility to identify any non-cargo cult behavior. Rational social actions are situations where an ISD team succeeds is their reasoning in relation to the intended values (value-based) or goals (means-end) of a chosen ISDM. Thus, the intended values and goals of the ISDM that the ISD organization seeks to adhere to, is the reference point when analyzing potential cargo cult behavior. Being rational implies when a person acts upon rational reasoning on either value-based or means-end calculations (Kalberg 1980) motivated by either intrinsic or extrinsic reasons (Mäki-Runsas et al. 2018). Having that said, if an ISD team acts rationally, they do not have a cargo cult behavior. ISDM cargo cult behavior is defined by Mäki-Runsas et al. (2018) as: *"An information systems development method cargo cult is a temporally delimited dysfunction that can have a non-rational or an irrational foundation. It leads to misconceptions and malpractices and can be both intrinsically or extrinsically motivated as an information systems development team unconsciously fails in an attempt to replicate the circumstances and success of others".*
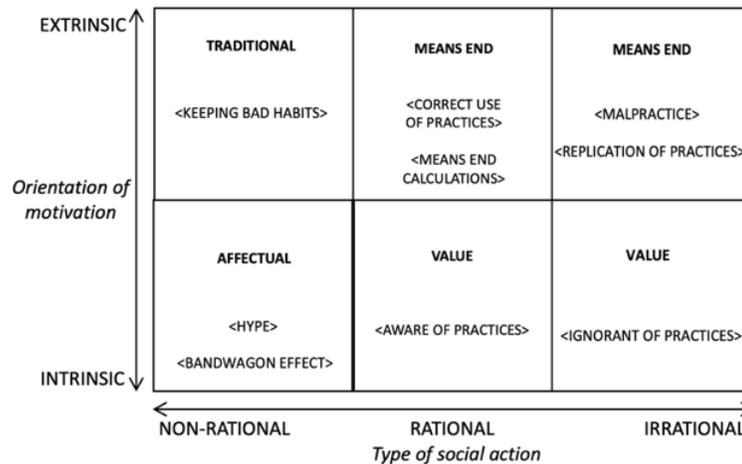
Figure 1. Extended version of "ISDM Cargo Cult Type Situations" (Mäki-Runsas et al. 2018)

Having a non-rational traditional social action implies that a systems developer acts upon an ulterior motive without having an underlying reason. This could be a situation where the ISD team does not reflect on their way of working and keeps old processes intact. An ISD organization could act upon collective emotive reasons, such as embracing the "hype" or act according to the "bandwagon effect", which is when people imitate or replicate others for its own sake. As the non-rational traditional social action, this non-rational affectual action is not founded on any type of rational analysis. Mäki-Runsas et al. (2018) describe flawed ISDM use as "malpractices". These malpractices can be for an example in an agile context, be related to the ISDMs practice. There could be two types of irrational behavior (Mäki-Runsas et al. 2018), see Figure 1. The first irrational behavior is the means-end cargo cult situation. This is due to an ISD team who does not properly understand the means-end rationality, even though they consider how to reach the goals of the ISDM and perform certain tasks based on an ulterior motive, but they misunderstand how to actually operationalize it. The second irrational behavior is the value-based cargo cult situation. The ISD team embraces the values behind an ISDM but lack the understanding of how to apply them. According to Mäki-Runsas et al. (2018) *"They fool themselves that they have a sound strategy but do not comprehend the strategic requirements"*. Both the non-rational and irrational social actions fall outside the reference point.

Method

The study objective was an international production company having a large IT department placed in Sweden. They were adopting an agile ISDM, moving from a linear traditional approach to an agile approach. This study focuses on one of their ISD team using Scrum. An ethnographically based research approach using observations and interviews (Czarniawska 2007; Oates 2006) was chosen for this study. The researcher was acting as an observant by shadowing the ISD team and the team members daily work during a six months period, focus on their DSM. This study is the first sample from a longitudinal ethnographical study that carries out for two years. The choice of method was due to getting deep knowledge to understand ISD teams' use of ISDMs and their behavior. Observations was conducted in order to understand what and how the ISD team work, and interviews to grasp the reasons why they were doing as they did. By doing so, it increases the possibility to identify potential cargo cult behavior. The data collection consisted of observer logs, notes from 6 interviews with both the scrum master and team members, and reviews of organizational documentation about their ISDM description. This description is the reference point for this case. With this as a starting point, detailed information was gathered about how the team uses the ISDM and why they do as they were doing. The data were analyzed using these steps; 1) Identify the teams practice according to method description, 2) Identify how the team uses the method practice and 3) Identify the social actions that have been carried out by the team. 4) Sort out if the social action were a) either non-rational, irrational or rational, and b) the motivation. 5) Identify any cargo cult behavior based on the sortation.

Result

The result consists of data analyzed from one ISD team, consisting of six team members, using the agile ISDM Scrum, and one primary practice; DSM. A DSM is an everyday meeting, focus on the current status of the teams' work, where each team member answers three specific questions: What did you do yesterday? What will you focus on today? and Do you face any hindrances? These meetings shall focus on getting everyone in the team aware of the current status and give a chance to raise questions. The goal is to create a shared understanding of the project status, create short term planning and achieve better interaction and communication within the team. (Schwaber and Beedle 2001). This is related to the Agile manifesto's sixth principle *"The most efficient and effective method of conveying information to and within a development team is face-to-face conversation"* (Beck et al. 2001). The ISD teams' documentation and intended goal, their reference point, of the DSM refers to the description by Schwaber and Beedle (2001).

The Team's daily scrum meetings

No.	Description of social action	Rationality	Type of SA
#1	Each Monday the team receives a debriefing report about the management meeting that took place last Friday. The information consists of the status of other teams and the project in general.	Irrational	Means-end
#2	Every team member tells about what they have done, any hindrances, and what they will do the current day.	Rational	Means-end
#3	The priorities of the tasks in the product backlog change during an ongoing sprint by their product owner.	Non-rational	Tradition
#4	Team members who have been on travel to other work offices give a report of their status and progression from their trip.	Irrational	Means-end
#5	Team members ask for help & suggest who might help when they are about to answer their three questions.	Rational	Means-end
#6	The team discuss technical solutions and asks for SM's opinions.	Irrational	Means-end
#7	The team receives new requirements during their ongoing sprint.	Non-rational	Tradition
#8	The team receives new tasks during an ongoing sprint, and the tasks add on to the current backlog while keeping the old tasks as well.	Irrational	Means-end

Table 1. The team and their daily scrum meetings

Following social actions can be found in Table 1. which consists of a description of each social action, the rationality and which type of social action "SA" it belongs to. Each social action has its own identification

number e.g. "#3". The team had DSMs every day for six months, during these meetings different actions were identified. First one out we find social action #1, Scrum master reports every Monday about the management meetings, which takes place each Friday. This information includes the status of the team and other teams' status. Due to the fact that a Scrum master should not include information other than what is necessary for the team to keep on working with their current sprint this action is noted as an irrational behavior according to the analytical framework. More specifically, malpractice having an irrational means-end behavior. Although, the team does consciously follow the DSM activity, social action #2, by using these three specific questions. Each team member tells what they have done if they were having any hindrances, and what they will do the current day, in order to achieve the goal with this DSM. The action is noted as rational behavior, more specific a rational means-end social action due to having reasoning behind the action taken where there is an underlying ulterior motive. The team receives new priorities regular during their ongoing sprints, which is social action #3. According to the DSM notation, the team should not be disturbed during an ongoing sprint since the team already have a specific product backlog to follow. Priorities of tasks should be done during the sprint planning meeting. Due to the fact that the team does get changed priorities during their ongoing sprints by their product manager, they are having a non-rational traditional behavior. The scrum master provides the team with the product owner's new priorities and acts upon an ulterior motive. These DSMs seemed to be able to become "off topic", especially when we look at both social action #4 and #6, where the team members either discuss reports from a long-term perspective or discuss technical solutions where the scrum master is expected to give its opinion straight away. The team members discussed these issues in relation to the three questions of the DSM but fall beyond the intended focus of the DSM. Therefore, these actions are noted as irrational actions, due to the malpractice of DSMs and thereof a means-end type of social action. The team is in this case derived by an ulterior motive to pursue the DSM and by that, it means they are acting on ulterior motive i.e. extrinsic motivation. In comparison to these two presented social actions, the team also discussed various obstacles and pinpointed if they faced any difficulties, which might need to be helped out by someone else, this is the social action #5. According to the description of what a DSM should consist of and contribute with, the team in this case, acted rationally with an ulterior motive aiming to achieve a certain goal. Thereof, the team had a rational means-end behavior. During the DSMs, the Scrum master informed the team about new requirements that have been received from the upper management, social action #7, during an ongoing sprint. Due to the fact that this organization was having a linear approach where the upper management decided what to focus on without sprints this action is, in this case, noted as a non-rational action, based on traditions where they kept old habits. Similar social action was identified in #8, where the team received new tasks during an ongoing sprint but due to not changing sprint goals and planning. Even though the SM was aware that this would affect the team's progression and the project, the team had an irrational means-end behavior.
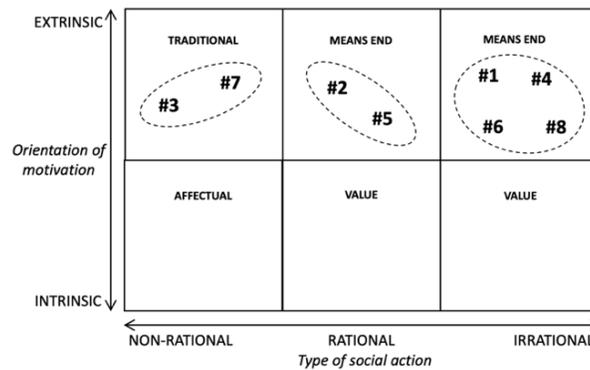

Figure 2. Cargo Cult Analysis of The Team's Daily Scrum Meetings

Identification of Cargo cult behavior

Figure 2. illustrates the teams' behavior in relation to the analytical framework. We can identify six out of eight social actions that are recognized as cargo cult behavior, which were related to non-rational traditional social actions and irrational means-end social actions. These were due to old habits kept left when the team kept the previous linear approach by added new requirements and change priorities in the middle of an ongoing sprint. The other cargo cult behavior was due to malpractices, by going beyond the scope of the intended in the DSM, and the meetings became "off topic". Two identified social actions indicate rational

behavior in terms of following the SDM activities when giving information about their current status and asking for help to inform the team of encountered obstacles.

Conclusion

This paper identified six out of eight social actions carried out by the ISD team that demonstrates cargo cult behavior in their ISDM adoption process. These actions have both a non-rational traditional and irrational means-end foundation, all having an extrinsic motivation. The team still use old habits from their previous process structure and face difficulties to have a pure agile approach, they also carry out different actions which lead them into malpractices. This cargo cult behavior could hinder the team from adopting the daily scrum meeting (DSM) properly (Mäki-Runsas et al. 2018). A next step is to identify how to overcome this behavior. A key contribution of this research is the operationalization of the ISDM cargo cult framework which provides analytical steps to use when using the analytical framework. A suggestion for further research is to focus on ISD teams who adopt different kinds of ISDMs, and since this study only focuses on one specific team and one ISDM practice, several teams and practices should be considered. In this study, the ISDM used by the ISD team was the agile ISDM Scrum and its practice DSM. Other researchers are encouraged to empirically test this analysis of ISDM cargo cult behavior in several cases, to subsequently gain a greater understanding of the existing cargo cult phenomenon in ISDM adoption.

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