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The big picture in an agile world

A qualitative study on coordination in a large scale agile context

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Abstract

Aim: Agile transformations are at the forefront of organisational development and comes carrying a wide array of changes to how organisations work. Coordination is one of many organisational dynamics that undergo a transformation in an agile context. Previous research has suggested that there are a lot of coordinative complexities with large scale agile transformations but empirical research on an organisation that is not exclusively a software developer remains relatively unexplored. As an inquiry to this gap, this paper sets out to explore how large scale agile methodologies affect coordinative efforts in a large manufacturing organisation.

Approach: By conducting a qualitative single case study, we investigate how coordination becomes conceptualised in a large scale agile context. 29 interviews and 10 on-site observations were carried out during a period of five months. In addition, our case is focused on a global manufacturer that has universally transitioned to the agile framework SAFe. Inspired by coordination theory, the purpose of this article is to scrutinise a large organisation working agile to shed light on emerging coordinative tensions.

Results: We find that although the agile transformation has boosted coordinative efforts, coordinative tensions remains to be explored. Specifically, our findings demonstrates how the organisation has become subject to three coordinative tensions, a) an non-standardised way of coordinating which results into an ambiguously defined relationships, b) a differentiated understanding of agile routines, leading into a mixed utilisation and value that they bring to the organisation and c) organisational disorientation, where employees experience a disconnection in terms of the interrelated tasks and the organisations direction.

Contributions: Empirically, our findings are in line with previous research that large scale agile generate coordinative challenges, but we have managed to contribute by providing a more nuanced view in terms of the relational aspect between individuals. Specifically, our study contributes by emphasising how coordination in a large scale agile organisation becomes divided into a decoupled state, with high intra-team coordination and lower inter-team coordination. Theoretically, we contribute by providing a conceptualisation of how coordinative tensions emerge in a modern organisational arrangement in an agile context.

Keywords: Agile, Agile Release Trains, System Teams, Coordination, Relational coordination theory.

Introduction

Transformative technologies have started to change how firms operate today, automation and electrification in the manufacturing industry are two industry trends where this is currently taking place (McKinsey & Company, 2019; Lee, Bagheri & Kao, 2015). Firms that seek to leverage their business model with technology do not only need to take into account the technological aspects, but do also need to morph their coordinative capacity to be more responsive and adaptive (Kellogg, Orlikowski & Yates, 2006; Okhuysen & Bechky, 2009; Crowston, Rubleske & Howison, 2015).

Responding to higher demands of coordinative capacity, many firms have transitioned their organisations to work agile (Denning, 2016). Agile working methods are best defined as an organisational tool and mindset that firms adopt to become adaptive towards whatever contingencies that they may face (Stoica, Mircea & Ghilic-Micu, 2013). A categorisation of the agile principles best define it as; (1) in contrast to structures and tools, agile organisations should prioritise the interactions between individuals, (2) it should be customer centric, (3) agile organisations should be highly iterative in their work processes and be responsive towards feedback so that improvements occur continuously (Crispin & Gregory, 2009; Dybå & Dingsøyr, 2009; Highsmith, 2002). Agile principles emerged 2001 through the agile manifesto, which define the characteristics of agile software development by emphasising on creating customer value with frequent deliveries, coordination with team members and continuous reflection (Beck et al., 2001). Accordingly, agile methodologies enable firms to continuously adapt and tweak their organisation, thus morphing into a loosely coupled state with formal and informally emerging coordinative processes (Atkinson & Moffat, 2005; Highsmith, 2002).

Although there are different versions of agile working methods such as Scrum, Kanban and SAFe (Reddy, 2015), a large stream of researchers has advocated that agile methodologies are more suitable for smaller software development firms and that there are major coordinative challenges that larger organisations face when embracing agile framework (Dikert, Paasivaara & Lassenius, 2016). Main challenges presented are a) synergy issues amongst teams, b) risk of redundant processes, c) coordinative barriers and finally, d) old bureaucratic processes that hinder adaptiveness (Dikert et al., 2016; Dingsøyr & Moe, 2014; Hoda & Murugesan, 2016). In spite of this, agile transformations have during the last decade become a major trend and made large organisations such as Paypal, Spotify and Google to transition towards agile (Sutherland 2014).

However, regardless of organisational structures, organisations require coordination to function properly (Faraj & Xiao, 2006; Okhuysen & Bechky, 2009; Malone & Crowston, 1994). Thus, achieving effective coordination is viewed as a continuous organisational enigma for managers and researchers to ponder about (Malone & Crowston, 1994; Brandts & Cooper, 2007). More importantly, in contrast to generic organisations, large scale agile methodologies require substantial coordinative efforts to function properly as these organisations are infused with new inter-organisational routines such as scrum meetings, program increments and new roles such coordinative roles such as scrum masters and product owners (Bick, Scheerer & Spohrer, 2016; Moe & Dingsøyr, 2017; Scheerer, Hildenbrand & Kude, 2014).

Accordingly, agile organisations are characterised by non-hierarchical structures that emphasises product development from a bottom-up approach with self-organising teams (Hoda, Noble & Marshall, 2011). Consequently, when it comes to coordinating activities such as communication or routines, such organisations are less reliant on structures or managers and instead rely on relationships between individuals to manage the daily tasks (Bick, et al., 2016; Moe & Dingsøy, 2017; Scheerer et al., 2014). Thus, as an inquiry to understand the relational aspect of coordination, relational coordination theory (RCT) has gained more attention in recent research (Gittel, 2006), but studying agile organisations from this perspective have shown to unexplored.

One firm that has recently adopted the agile framework is our anonymised case referred to as AutoCo. The company have transformed and adopted a large scale agile organisational framework named SAFe. This have affected how thousands of employees work and has decentralised their organisational structure by dividing it into subdivisions and self-organising teams. Furthermore, this firm is primarily a manufacturer and not a software development firm, however, the firm has made the transition to universally work agile. Thus, when it comes to coordinative arrangements, AutoCo have altered their organisation.

Agile working methods induce a lot of coordinative complexities such as described above. However, as agile is an emerging trend (Cram & Newell, 2016), we argue that existing research on how large scaled agile working methods affects coordination in a firm that is not exclusively a software developer remains relatively unexplored. Thus, this paper serves as a call to Dikert et al., (2016, p. 106) statement, that when it comes to research on large scale agile organisations, “research is seriously lagging behind“. By drawing on a coordination perspective, the purpose of this article is to scrutinise a large organisation working agile to shed light on emerging coordinative tensions with working agile and we aim to answer the question: *How does coordinative tensions unfold in a large agile organisation?*

This paper is outlined in the following way. First, we provide with an overview of previous empirical studies on agile transformations. Secondly, we introduce our theoretical framework by discussing relevant coordination literature by highlighting its main ideas. Then we present the methodological approach for this paper. Fourth, we present our data which is derived from our case organisation. Fifth, we discuss the key findings and connect them to previous literature. Lastly, we outline the conclusion of the paper and discuss the implications for previous and future research.

Previous research

A large stream of research on agile organisations has mainly emphasised studying how agile methodologies work and where its origins from (Boehm & Turner, 2004; Crispin & Gregory, 2009). Other streams of research have strived to clearly separate what agility is and what it is not. For instance, Larman and Basili (2003) and Rigby, Sutherland and Takeuchi (2016) has critically evaluated the differences between agile methodologies, constituted on people and values contrary to traditional management views that derives from structures and processes. These studies have shown that agile methodologies are primarily suitable for smaller organisations but as previously discussed, agile is today becoming a managerial trend that

larger organisations adopt (Dikert et al., 2016; Dingsøyr & Moe, 2013; Williams & Cockburn, 2003).

A comprehensive literature review on existing research with large scale agile organisations concludes that such organisations become susceptible to several challenges such as synergy issues, misalignment, old bureaucratic processes that hinder adaptiveness and coordination (Dikert et al., 2016). Although the paper manages to provide new insight in complexities with working agile in large organisation, only 6 out of 52 studies were scientific research papers, the rest was experience reports (Dikert et al., 2016). Recent research in this area have studied success factors with agile transformations (Paasivaara, Behm & Lassenius, 2018), communication barriers (Murphy & Donnellan, 2009), comparing quality and adaptiveness (Korhonen, 2012) or scrutinisation of new roles in the agile transformation (Jovanović, Mas, Mesquid & Lalić, 2017). However, previous research has predominantly focused on software development firms, thus, empirical research on large scale agile organisations outside the software realm remains relatively uncharted territory (Cooper & Sommer, 2016; Conboy, & Fitzgerald, 2004).

Like previously argued, coordination is an essential feature of organisations, more importantly, agile organisations require coordination to cope with demands of adaptiveness (Hole & Moe 2008; Scheerer et al., 2014; Strode, Diane, Huff, Hope, 2012; Xu, 2009). Research on coordinative aspects in agile organisations do mainly focus on intra-team coordination and not taking a wider organisational perspective (Dingsøyr & Moe, 2013; Dingsøyr, Fægri, Dybå, Haugset & Lindsjörn, 2016). For instance, Scheerer et al. (2014) investigate how effective coordination is achieved between teams. While other researchers' ambition was to generate theoretical indicators for how to achieve inter-organisational coordination (Strode et al., 2012; Xu, 2009). Moreover, other researcher studies knowledge sharing (Razzak & Ahmed, 2014), team interactions (Crowston, Chudoba, Watson-Manheim & Rahmati, 2016) or challenges and success factors with large scale transformations (Kalenda, Hyna & Rossi, 2018). In spite of this, recent studies have extensively focusing on either small firms or primarily scrutinising software development firms and how they become affected by agile working methodologies (Crowston et al., 2016). In sum, this paper identifies two gaps in previous research which we aim to contribute towards. Firstly, research on coordinative challenges in agile organisations are primarily focusing on smaller firms, thus, research on large scale agile organisations remains rather scarce. Lastly, emerging research is primarily scrutinising software development firms, regardless of size. However, our single case study is concentrated on AutoCo which is a global manufacturer, that has universally transitioned to work agile. This fact alone makes it a unique case to elucidate upon.

Theoretical framework

The roots of Coordination theory

Early coordination research served with guidance on how to coordinative activities between different organisational actors (Malone, 1988; Malone & Crowston, 1994; Thompson, 1967). Historically, early perspectives on coordination, viewed it as a result of deliberate activities to control the embodied context that organisations find themselves in (Faraj & Xiao, 2006;

Okhuysen & Bechky, 2009). For instance, Scientific management, also known as Taylorism (Taylor, 1916) and further developed by Fayol (1949), advocated for organisations to be characterised by centralised management systems such as chain of command, top down work plans and measured tasks, which then became rationalised as a managerial panacea for coordinating in organisations (Scott & Davis, 2007).

However, an ontological drawback from such perspective is that coordination is viewed a priori, as something stable and given (Okhuysen & Bechky, 2009). Where coordination is more a deliberate result in efforts to produce and control formal activities (Faraj & Xiao 2006). In spite of this, recent streams of research on coordination argue that such perspective fails to account for how emerging coordinative activities unfolds in organisations, thus, arguing that coordination is more importantly an ongoing process of both planned and informal activities that arises due to emerging ambiguities which organisations encounter (Gittell, 2000; Okhuysen & Bechky, 2009). Nonetheless, recent definitions on what coordination actually entails differ widely. Quinn and Dutton (2005) defines it as the collective work by actors in order to achieve goals. Heath and Staudenmeyer (2000) describe coordination as a way to align organisational activities. McGrath, Arrow and Berdahl (1999) defines it as having a shared understanding and synchronising organisational activities in both time and place. What these definitions have in common is that coordination is more importantly viewed as an ongoing accomplishment, but perhaps, a more exhaustive and elegant definition of coordination is developed by Faraj and Xiao (2006, p. 1157) “Coordination as a temporally unfolding and contextualised process of input regulation and interaction articulation to realise a collective performance”. By drawing upon this definition, we now discuss emerging streams of research on coordination and view how they have studied and conceptualised coordination in organisations.

Emerging streams of coordination literature

In any organisation, coordination consists of different mechanisms that organisations utilise to achieve collective goals (Mintzberg, 1989). The most frequently used coordination mechanism in coordination studies are plans, task assignment, resource allocation, roles and routines (Van de Ven, Delbecq & Koenig, 1976; Okhuysen & Bechky, 2009). Although there is research on how these mechanisms become utilised in organisations, an overarching theoretical definition of how these mechanisms interplay with each other to facilitate effective coordination is relatively unexplored (Okhuysen & Bechky, 2009).

As an inquiry, Okhuysen and Bechky (2009) conceptualises three integrated conditions for effective coordination; accountability, predictability and having a common understanding which enacts through a wide array of interrelated mechanisms. Accountability is a way to assign where the responsibility lies and to coordinate organisational activities with other actors (Okhuysen & Bechky, 2009). When accountability in an organisation is established, actors within an organisation can define where and at whom the responsibility from their interdependent tasks are situated (Ammeter, Douglas, Ferris & Goka, 2004). One way to construct accountability in organisations is through routines and meetings, that assist in defining and specifying accountability by sharing information with each other, which clarifies who should do what (Okhuysen & Bechky, 2009). Predictability enables employees to foresee

upcoming assignments based on jointly agreed upon work tasks (Okhuysen & Bechky, 2009; Rico, Sánchez-Manzanares, Gil & Gibson, 2008). Prediction of others work can become accomplished through coordinative mechanisms such as plans and routines (Feldman, 2000; Nelson & Winter, 1982). Moreover, as employees share knowledge and experience amongst each other, a sense of familiarity is established, where individuals form a stronger bond through closer relationships, which consequently stimulates effective coordination in organisations (Reagans, Argote & Brooks, 2005). Lastly, common understanding enables coordination through creating a collective identity amongst individuals (Okhuysen & Bechky, 2009). Common understanding is defined as employees having a good understanding of the overall goals in the organisation, which act as an incentive for employees to reach shared goals (Bennis, 1989).

It is important note that, the three integrated conditions should not be viewed as a stable panacea, ready to serve organisations, instead coordination should be viewed as an ongoing organisational accomplishment. This view is in line with seminal works of Malone and Crowston (1994) and Thompson (1967), which acknowledged that there is not a single solution to organise and coordinate in organisations. Thus, it is important to recognise that how coordination becomes studied is highly dependent on the contextual environment that organisations find themselves in. In addition, Bechky (2003) studied how knowledge sharing in organisations becomes challenged, where difficulties arise in how well involved actors understand the real value of organisational practices. This highlights the importance of having efficient information transfer among actors (Bechky, 2003).

Moreover, Bechky (2003) emphasise the notion of knowledge sharing as situated in highly local heterogeneous environments. Thus, each individual or group all have their own subjective notion on how they should work as well having expectations on how other actors should work. One way to promote inter-organisational coordination is to coordinate activities with each other through employing what Galison (1997) conceptualises as trading zones. A trading zone is a temporal arrangement where actors engage in coordinated activities such as exchange of ideas and sharing knowledge (Galison, 1997). Empirically, Kellogg et al. (2006) examines how an interactive marketing firm with diverse groups and divergent interests enact a trading zone where exchange of ideas and action translates into coordination across organisations. By sharing knowledge, individuals interact with each other and create a relational bond that serves to boost coordination in organisations (Cabrera & Cabrera, 2002; Ipe, 2003). Although, trading zones may explain how actors, despite divergent interest, can coordinate work through sharing knowledge, it does not take into account all relational aspects that might affects coordination (Gittell, 2002). Thus, we now turn to synthesise and discuss the stream of relational coordination.

Relational Coordination Theory

As an inquiry to gain further conceptual insight on how organisational relationships influence effective coordination, relational coordination theory was developed (RCT) (Gittell, 2002). RCT highlights the importance of relationships among organisational participants to reach effective coordination (Otte-Trojel, Rundall, de Bont & van de Klundert, 2017; Gittell et al., 2000). More specifically, Gittell (2002) conceptualises three dimensions of RCT that together

constitutes how interrelated actors achieve collective goals in organisations, (1) shared knowledge, (2) shared goals and (3) mutual respect. Shared knowledge refers to how well employees understand how their tasks are connected to others, secondly, shared goals, refers to what extent individuals perceive a connection to the overall goals in the organisation which act as an emotional drive for employees to excel in their tasks (Gittell, 2011). By experiencing shared goals in the organisation, employees feel an emotional bond to the each other, which then encourage employees to engage in more cooperative behaviours to fulfil the company goals (Chow & Chan, 2008; Gittell, 2006). Lastly, mutual respect is defined as the level of respect that individuals have for each other (Gittell 2006).

Moreover, having effective communication is argued to be a vital element for relational coordination (Claggett & Karahanna, 2018). According to Gittell (2006), communication could be conceptualised in four interrelated elements; (1) frequent communication allow organisational members to strengthen their bond to each other by having frequent communication, (2) timely communication refers to how updated the content or topic is when organisational members engage in communicating with each other (Gittell, 2006). (3) It is not enough to communicate often or having updated information, it is also considered essential for the communicated information to be accurate for both parties (Gittell, 2011). (4) When actors engage in communication, information sharing should preferably be characterised as a problem-solving environment with positive and constructive ideas (Stevenson & Gilly, 1993; Gittell, 2011).

In the same vein, Otte-Trojel et al. (2017) studies how RCT is used to mitigate challenges associated with inter-organisational coordination. Conceptually, three challenges were identified. Firstly, organisational proximity; the level which individuals understand how already established coordinative routines actually work, secondly, technological proximity; the knowledge gap between two or several actors that collaborate with each other and lastly, geographical proximity; the physical distance between collaborating actors (Otte-Trojel, et al., 2017). By investigating how networks of health organisations organise and coordinate patient journals, they conclude that RCT mitigates challenges associated with organisational proximity and technical proximity by stimulating the level of shared knowledge and shared goals between different organisations. However, geographical proximity, in terms of the physical distance between actors was shown to still be an evident issue when coordinating in different occupational spaces (Otte-Trojel, et al., 2017).

In addition, actors from different departments may face coordinative challenges due to differences in expertise and belief systems for how coordination should work (Gittell, 2006). For instance, Dougherty (1992) developed the idea that actors in separate departments could end up in what she called different “thought worlds“. Where each department is so concerned with their own work that they may overlook coordination opportunities. These thought worlds were characterised as having separate divergent interests and an internally focused mindset which inhibits potential collaboration opportunities since each department would to be occupied with their own work (Dougherty, 1992). Moreover, RCT discusses that organisations that do not emphasise the role of relationships may become subject to alienating the identity of organisational members (Gittell, 2006). Whereas individuals become subject to losing their own identity as well as having a hard time creating connections with each other, thus, inhibiting

effective coordination in organisations (Gittell, 2006). Alienation is not the only tension that may constrain effective coordination. Structure and design of organisations may also impose challenges since it provides the necessary coordinative arrangements for employees to partake in (Gittell, 2006). For example, hierarchical structures with close monitoring and formal routines have standardised work procedures which do not require strong relationships to the same extent (Gittell, 2000).

However, as argued in previous sections, an emerging organisational trend is agile organisations, characterised by removing bureaucratic layers and enabling autonomous groups, thus new forms of organisational structures emerges that require a higher emphasis on interdependent tasks and close relationships (Hole & Moe, 2008; Dikert et al., 2016). Hence, as Gittell (2006, p. 88) acknowledges; “More work is needed in this arena to specify the structures that support relational coordination, as well as the obstacles to their adoption“. Thus, by drawing on such perspective, we are able to provide new insights and nuances in how coordination unfolds as a relational process in a large scale organisation. Moreover, we find that our review over the coordination literature have predominantly focused on providing the necessary conceptual framework for establishing effective coordination. Thus, we argue that research on aspects that may generate coordinative tensions in agile organisations remains inadequate and we aim to scrutinise this area further by developing new conceptual insight regarding coordinative tensions that may emerge.

Methodology

Research design

In order to answer the research question; *How does coordinative tensions unfold in a large agile organisation?*, a qualitative research strategy has been utilised with the intention to provide deep and rich insight in a single case, compared to a broad overview of the research setting that a quantitative study provides with (Flyvbjerg, 2006). Qualitative research enables researchers to meticulously observe and analyse the material (Flyvbjerg, 2006; Silverman, 2016). In order to delve deep into the studied material, interviews become the favoured methodology for data collection. (Silverman 2016; Kvale, 2006). Thus, this thesis data derives from the narratives and experiences which have been synthesised through a series of interviews, supplemented with on-site observations. Moreover, as argued in the introduction, this research paper aims to contribute with new insight in a relatively unexplored area, thus, qualitative research is argued to be more suitable for research areas that are relatively unexplored since it becomes more significant to provide comprehensive insight and depth into a single setting. (Silverman, 2016). Therefore, we argue that this research design was a good fit for our case. Ethically, to protect the confidentiality of the processed information in this article, the case organisation has requested to remain anonymous. Thus, we have fully anonymised our case and it is henceforth referred to as “AutoCo“. In addition, contextual factors such as the operating industry also remains undefined.

Data collection

This study was conducted at a department at AutoCo that has the ambition to develop software for autonomous manufacturing. The data for this study was primarily collected from two sources. First, 10 observations were organised, goal of the observations was to get an overview of how the different teams operate and work in their daily situations (Watson, 2005). Secondly, 29 interviews were conducted which serve as the foundational analytical input to our thesis. The data collection was organised in two phases. Initially, observations were conducted in forms of attending agile meetings that occurred on a continuous basis. More specifically, five daily stand-up meetings, two Scrum of Scrum, one Program Increment (PI) event and two system demos were attended. A risk with conducting observations is that people become aware of the observer's presence, thus acting slightly different than they normally would (Argyris, 1980). We mitigate this risk by conducting passive observations whereas we did not interact in anyway with the observants. To not draw attention during the session, notes were taken directly afterwards. Themes around the notes were; number of participants, active participants versus passiveness and descriptions on the procedures. As on-site observations provide insight with how employees operate in practice and interact with each other (Watson, 2005), it eases the understanding for researchers to understand their daily work situation and notably, it provided us with inspiration for how to structure themes for the interview guide.

The second phase of the data collection consisted of 29 conducted interviews. Interviews were conducted within the whole department for a specific business function in the manufacturing organisation which consists of primarily two subdivisions, one supporting division and one developing division. Additionally, we aimed to interview employees at different levels in the department since it generates a more nuanced view for the collected insights. The number of interviews and which role the respondents have is listed in the table 1.

Position	Number of Interviews
Team Member	7
Product Owner	6
Scrum Master	2
Team Manager	2
Section Manager	1
Release Train Engineer	2
Product Manager	2
Solution Train Engineer	1
Solution Architect	4
Solution Manager	1
Agile Coach	1
Total number of Interviews	29

Table 1. Illustration of the titles of the respondents and the number of interviews.

Ethically, to protect the respondents' identity and facilitate an interview environment where the interviewees feel emotionally safe to engage in talking about topics that are sensitive, all quotes and names have been anonymised (Aquilino, 1994). Considering ethical aspects regarding anonymity, some of the roles interviewed that only posits a single or few persons,

are referred to a more general role definition in the citation, for instance by being named as a “Manager”.

Furthermore, interview targets were selected in such way, so all the agile roles were interviewed. Initially, we started our interviews with people within an agile team in the System teams, which is a supporting team in the department. However, in order to find more relevant people to interview we utilised the method of snowballing, in other words, finding key persons to interview by actively listening and asking the current interviewee for relevant interview targets in the department (Raworth, Sweetman, Narayan, Rowlands, & Hopkins, 2012). The purpose of the interviews was to understand the subjective notions of the narratives and experiences that organisational members provide about their own role and their workplace. It is worth to mention that a limitation of utilising interviews as a primary source is that the findings reflects only the subjective narrative of the respondents, thus not subject to higher degree of generalisation. To mitigate this, input from the observations have been utilised to supplement the recurring themes that the data synthesis has provided, thus making it more relevant and accurate to portray the full picture in organisations.

The interviews had the shapes of semi-structured interviews with an interview guide (Longhurst, 2003). Semi-structured interviews were used since it provides with an inherent flexibility (Raworth et al., 2012). Thus, it allowed us to both utilise premade questions based on different themes, follow up with relevant questions and more importantly, changing the direction of the interview to capture unexpected discussions that may arise (Longhurst, 2003). In order to create well suited questions, a pilot interview was conducted in the beginning of the study. The pilot interview served as a test whether if the questions worked in the setting and what questions that are not working (Rabionet, 2011). Thus, conducting a pilot interview is a crucial element of qualitative research since it enables reflection upon the chosen interview guide (Rabionet, 2011).

To ensure satisfactory answers, a series of themes were established in beforehand that would be brought up if no interesting insight occurred during the interview. The interviews lasted between 45 to 60 minutes, to ensure that we got the in-depth insight in to each interviewee. The interviews were recorded, which eliminated the risk of missing interesting material (Richards, 1996). Interviews were conducted until that point when saturation was reached, that is when the interviews did not longer add any additional and new relevant data for the study (Glaser & Strauss, 1967). Lastly, additional information was supplemented from external databases and search engines as Google Scholar, Web of science, Gothenburg University library database and as well as AutoCo internal database.

Data analysis

Inspired by grounded theory, the data has been analysed through iterative process where coding and categorisation of the material occurred continuously and right after each interview (Martin & Turner, 1986; Corbin & Strauss, 1990). Consequently, we were able to capture emerging, distinctive and recurring patterns during the interviews that serve as our base categories for the data collection (Martin & Turner, 1986). By employing such approach, we ensure that our findings are closely linked to the collected data in two ways. Empirically, employing a grounded theory approach enables us to continuously analyse our material which provides

accurate and comprehensive insight into our case. Theoretically, we do not aim to test or verify an existing hypothesis, instead we draw away from taken for granted assumptions in research to provide a more detailed developed explanation of the case (Reeves, Albert, Kuper & Hodges, 2008).

Hence, our theoretical literature reviews and explanations took place after the data was collected, only then, we developed theoretical concepts to explain our case. The analysis was conducted in two iterative steps. Firstly, interviews were continuously transcribed along they were conducted, which is a useful way to facilitate analysis of qualitative data (Flick, 2013). Secondly, by drawing on grounded theory, the collected data from the interviews was coded through three different phases. Firstly, the transcribed data were coded, by using open coding, the data could be broken down in such way, so it enabled the researchers to get a brief overview of the material (Corbin & Strauss, 1990). In this step, we employed a line by line coding of each transcribed interview which resulted into 300 codes. Secondly, axial coding was employed with the intention to develop the codes into a higher stage of abstraction (Corbin & Strauss, 1990). This was done by linking initial codes to each other and identify emerging patterns and recurring themes which then form broader categories. A crucial element in this phase reflect upon the material and identify what it means on an aggregated level (Corbin & Strauss, 1990). This process boiled down the initial codes into 12 main categories. The third step in our coding process was to organise the axial categories into selective codes, where we merge our categories in broader categories. These selective categories are what serves as the fundamental features in a grounded research paper (Corbin & Strauss, 1990). By merging similar and contrasting themes, three different core categories were created in this process; (1) A varied utilisation of the agile practices (2) Challenges with coordination in an agile organisation (3) Lacking the bigger picture. Example of the coding process are illustrated in table 2.

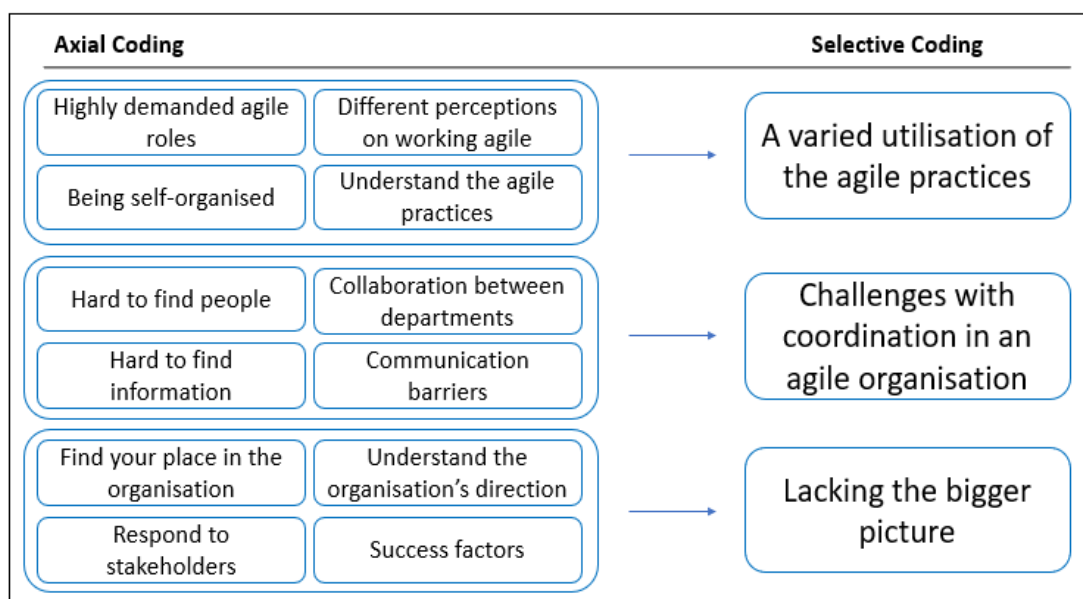


Table 2. The coding processes.

Finally, when all the data was collected, coded and categorised, we began to generate a theoretical framework for our findings. It was carried out by extensive reading of previous literature on coordination that tries to explain similar phenomenon. By doing so, we gained an overview of how previous authors conceptualised coordination in their research which provided us with inspiration in developing our own framework. However, our ambition is to not only find relevant concepts that fit with our case, but also to build on previous theory to provide new conceptual insight in what coordinative tensions agile organisations may face. By linking relevant concepts from previous literature and discussing them in relation to our case, we gained a conceptual understanding and developed three theoretical dimensions that our discussion focuses on, an ambiguous defined relationship, differences in making sense of the agile way and in a state of organisational disorientation. Thus, by employing such framework, it allows us to scrutinise and shed light on emerging coordinative tensions to our case, which serves in answering the research question.

Empirical Findings

Case background

AutoCo has undergone a major transformation, going from a conventional manufacturer to aspiring to become a knowledge intensive and innovative firm in their industry. The manufacturing industry is constantly changing and adapting to new demands of electrification and automation. (McKinsey & Company, 2019). AutoCo has ambitions to lead this change by emphasising heavily on intensive software development to boost their technological progress. However, they do not only rely on significant software development, but they also require substantial coordinative flexibility to become more adaptive towards new challenges. As a response to meet this coordinative flexibility, AutoCo have adopted a popular software development methodology named Scaled agile framework i.e. SAFe. It consists of different value streams that are responsible for a specific product that in turn will be delivered to the customer. Each value stream also has organisational subdivisions, these are named Solutions, responsible on developing a specific product or service that will generate value to the value stream, and thus the end-product (Scaled agile, 2020). This study falls under a specific business solution that has the function to develop software.

The Solution have three hierarchical levels, first is the Solution level, secondly, the Program level and lastly, Team level. The Solution level is the higher management level which have the overall responsibility within the Solution. At the Program level, there are different units that works with systems or products that are in the scope of autonomous manufacturing. The different units are labelled as Agile Release Trains (ARTs), each ART are responsible for not only developing software but delivering a finished product. For this solution, there are currently three ARTs. In addition, the ARTs have two supporting units named System Teams that develop test-environments, infrastructures and they verify software, as well as Shared Services that serve as extra competence to the ARTs. The System teams are a supporting organisation to all the ARTs in the specific solution.

System teams are responsible for testing and verifying the software that are developed by the ARTs. Hence, the ARTs are delivering the final product to the value stream, while the

System team are not delivering a final product, rather they are a supporting unit to the ARTs. Within both the ARTs and the System teams there are several smaller teams of four to six people that works on different tasks, this is at the Team level. For the purpose of this thesis, we have narrowed down the scope of our thesis to scrutinise the whole solution, but primarily investigating the coordinative relationship between System Teams and ARTs. The main reason for this is that the ARTs constitute a vital role in the organisation, since they are the ones delivering end to end value to customers, and System teams are according to SAFe supposed to support the ARTs in delivering software. However, in terms of coordination, there are several ambiguities associated with this relationship. Thus, we now turn into presenting complexities with coordinating activities within the organisation.

Shattered understanding of the agile way

The agile transformation has induced several coordinative processes that have a direct impact on the daily work of the employees. These processes have clear purposes from the SAFe framework but are perceived and utilised very differently by actors in the organisation. In practice, they get referred as agile practices or routines, translating into meetings at different levels in the organisation. The purpose of these practices is to remove impediments in the daily work tasks by emphasising enhanced collaboration and continuous reflection among the teams. However, narratives amongst certain employees showcase that it is not clear in what purpose nor value these agile practices actually serve. For example, a Product Owner states;

In a way, some meetings are unnecessary, backlog refinements, demos. There are a lot of meetings that are negative on the collaboration side. I rather skip eighty percent of the meetings that we have. To me, such meetings are unnecessary and takes too much time for me. It is too much status-reporting, it is not about collaborating. (Product owner, System teams)

The Product owner's main responsibility is to prioritise tasks and collaborate with other stakeholders in the organisation through meetings and conversations to align organisational objectives. Nonetheless, some meetings are being perceived as unproductive and some participants are not even clear on the real purpose of the meetings. This implies that, the structure of certain meetings may be ineffective and does not provide a platform for collaboration as intended. One example of such procedure that has been expressed by one of the employees are the internal Product owner-syncs in the System teams (A status reporting meeting for Product owners, i.e. PO-sync). One of the Product owner's states;

PO-sync is totally useless [inside the System teams]. PO-Sync, I am not sure what it does or what it is. We do not have a common ground, we have a common strategy but we do not do that much together. The value that is being created is with the ARTs, we need to talk to them. I would prefer to have a PO-Sync with the ARTs, a PO-Sync with only the System teams is useless. (Product owner, System teams)

System teams operate on four common but yet distinctive areas of competence, thus, one Product owner strongly believes that having internal alignment meetings amongst the Product owners serves very little purpose and does not add any value towards the work being done. Rather, more synchronisation and coordination with the ARTs is desired by a vast majority of employees in System teams. More on this will be covered in a later section of this paper. AutoCo's philosophy of working agile requires a high effort to continuously improve the coordinative capacity of their organisation, however, it has been shown to sometimes be detrimental by members questioning or not understanding the real purpose of certain agile meetings such as the Product owner-sync.

Passive participation in agile practices

Continuous reflection upon the daily work and improving ways of working for the future is a vital element in the agile doctrine. Consequently, SAFe has introduced several new coordinative mechanisms to provide the necessary structure and communication channels for employees. Although these meetings take place, not everyone is on the same page in what value that is being generated from these meetings. A team member goes on by saying that retrospective sessions, instead of operating as a forum for reflection and feedback, they sometimes become more repeated as formal procedures without any new outcome.

It [retrospectives] tends to be more repetition of the same thing /.../ We say the same things, and nothing happens, it feels like repetition. It does not come out anything good from it, like what can we actually do about it? It gets boring in the end and people do not think they can get so much from it. (Team member, ARTs)

Naturally, such situation, is argued to go against the essence of reflection since if the members do not reflect or act upon their reflections, then the ways of working will remain the same and might not be improved. According to another employee, another implication is that it leads to a downward spiral where stagnant and recurring problems may not get addressed. Furthermore, agile practices related to reflection and retrospectives are mutually dependent on enthusiasm from the participants as well as the facilitator of the meeting. However, when a Manager that facilitated such meetings was asked to explain on how they act on improving things brought up during these meetings, the respondent occasionally expressed contempt for how retrospectives were being carried out.

I think we need to find a process of acting on things that we come up in the retrospectives. Right now, we are finding impediments by going through risks, but it is not really a formal process. We just ask people to find risk and then we do not give a shit. (Manager, System teams)

Such statements indicate that there is a misunderstanding towards retrospectives and that sometimes, these meetings are more being conducted as formal must-be done procedures, rather than serving as a forum for organisational rejuvenation. The exact predicament that

inhibits productive reflections is a very complex thing to identify, however, this paper evidently shows that mixed feelings regarding retrospectives are present, from both participants and facilitators. When employees were asked in why they are not more engaging in such sessions, one employee stated;

I think retrospectives are the hardest thing to get effective. Because it requires engagement from individuals. However, some of the team members are falling asleep, they want to rather work and are not interested in it. (Team member, ARTs)

This entails that certain employees do not prioritise the reflective sessions and prefer to rather work on developing products to the customers. At the same time, one of the facilitators of an agile meeting, expressed his distaste for asking people about risks in their daily work but at the same time not caring enough to do something about it. Such situation indicates that certain members do not fully believe in the real value of the agile practices and some teams have even sometimes skipped to have certain retrospective sessions. However, it is important to highlight that not all teams or people express the same experience regarding agile retrospectives. Evidently, many teams are conducting these agile practices differently. One employee stated that his team does not formally engage in retrospectives but instead their team takes up issues on a real time basis to deal with impediments as they emerge. Other teams state that they follow the framework as it is and others follow the procedures when they see an urgency for it. This encompasses that there are teams that use retrospectives as a platform for improvement whilst others do not really understand it or does not see the value in doing it.

To sum, AutoCo's agile transformation has introduced several new agile practices that have shown to not be fully understood by everyone in the organisation. For some employees, they did not believe in the real value or purpose in agile retrospective sessions. At the same time, other teams have shown to adopt it quite well, indicating that there is a shattered understanding of these coordinative arrangements. Such situation entails that there are teams that use retrospectives as a platform for improvement whilst others do not really understand it or does not see the value in doing it. We now move away from discussing agile practices and what implications this may have had on our case to showcase complexities associated with a new coordinative role in the organisation.

Product Owners as a highly demanding coordinative role

The agile framework has also introduced several new roles as well as removed old roles in the organisation. The responsibility and ownership of the work is now much more divided into various functions and teams. A central role in the agile framework is the Product owner. Each agile team has a Product owner which is responsible for prioritising the objectives of the teams and ultimately decides what is going to be delivered to the customer. Thus, it is imperative that they have a very coordinative role where cross functional collaboration with stakeholders, management and teams are in place. However multiple narratives at various levels in the organisation experience that these people are periodically viewed as occasionally unavailable and that they perhaps are overloaded with work. Even other Product owners experience that it

is hard to coordinate well with other Product owners since they are often too busy. For instance;

We see that the Product Owners are quite challenged, if you try to get a hold of a Product owner, it is impossible, they are always too busy. I have been trying to contact other Product owners and it is hard to get a hold of them for the upcoming three weeks, this should be done much earlier. (Product owner, ARTs)

Naturally, the reason of what takes up their time is varying a lot depending on whom is asked, but a recurring theme is that the objectives of the Product owner in the ARTs and System teams vary to a larger extent. For the ARTs, they are responsible for delivering a product to the end-customer, whilst the Product owners in the System teams are concerned to support and deliver test-environments and infrastructures towards the ARTs. For example, one Product owner in the System teams explained that,

I think they [Product owners] are stressed, I think it is a lot for them to do. In System teams, we have an easy life, we are not connected to the product directly as them [In the ARTs]. (Product owner, System teams)

Such situation implies a complex organisational arrangement between the two departments and although the agile transformation strived to enhance coordination, it remains a quandary to solve. But an important point to acknowledge was how the general consensus for all the interviewees in System teams expressed major eagerness to work more closely to the ARTs and this will be covered in the next section of the article. An aftermath of having too busy Product owners has been expressed by a team member that he did not feel he received updated information about their product when he needed it. The purpose of the Product owner is to synchronise amongst different stakeholders and communicate the prioritisations or modifications to their respective team. However, due to the busy nature of certain Product owners, some team members expressed that although they knew that their Product owners attend higher level meetings, information did not get communicated as frequently as they would like. For example, one team member stated;

The Product owners are extremely busy and tied up to meetings. Teams can still have communication between them, but we lack the information on what happens on a higher level and who sets the priorities. Sync-meetings are good but what happens with the information when the Product owner gets new information but is too busy to communicate this to their team. (Team member, System teams)

As a result, the team member felt that it hindered the pace of the development which then affected the whole team. Consequently, such teams experience a lack of a broader understanding in how their work is contributing to the end product. This topic will be covered

in the last part of the empirical section. Another reason why employees may experience unavailable Product owners could be that the products might from a technical as well as a business perspective be too large and complex for one single person to handle. For instance, a top-level manager in the Solution explicitly discusses this complexity.

There are not enough Product owners to cover each function. So, a lot of things have fallen between chairs /.../ When you do a transformation, you remove a bunch of roles. But they [Management] forget that some of the roles are not replaced or that the work that they were doing were forgotten. (Technical expert, Solution)

Lastly, it is imperative to acknowledge that the core of working agile derives from being customer centric. Thus, Product owners have a vital role in ensuring stakeholder objectives are met and that teams are well informed through continuously altering team objectives along development work. To sum up, our findings show how several employees experiences a lack of sharing information and absence of available Product owners in the organisation. It is important to note while several narratives highlight that Product owners are busy, these experiences are primarily derived from other employees and not directly from Product owners themselves. An implication from this situation is that many employees perhaps experience an overreliance on Product owners to steer the direction of the team. Consequently, one can argue that Product owners have a crucial coordinative role in the organisation, since they are the person that every employee turns to for work directions. We now move away from discussing coordinative implications of agile practices and roles to shed light on coordinative tensions between the two departments.

Coordination in an agile world, a blessing or a curse?

Enabling cross functional coordination was one of the main drivers in the agile transformation in AutoCo. By adopting the SAFe framework, the initial reasoning was to facilitate smoothness and faster coordination among teams as well as departments. Although AutoCo has achieved this in many ways, coordination is still perceived as an issue among the majority of the respondents from all levels in the solution. It is important to note that the general issue is not derived from unwillingness to coordinate but finding ways to do so. For the System teams, relying on timely coordination is essential since their primary objective is to function as a supporting organisation. In spite of this, several employees discuss how there is a rather low level of awareness in how the System teams can support other agile teams, consequently hindering full utilisation of the System teams.

Even if agile is meant to be open and transparent, we still work in silos, we do not really know what the other teams are doing, but if you would know what the other teams are doing, that would help. (Team member, System teams)

and,

Some people really do not know what we [System teams] are actually doing. In my view, it should not be that difficult, we need to sell ourselves, we need to present ourselves and what we can offer and present our offerings. Make sure that we are there to support them [The ARTs]. Long term, ARTs should put requirements on us. Today we do not have that, the key thing is that they should tell us /.../ We need to integrate the ARTs and the System teams better. (Manager, System teams)

Within the System teams, there is a general consensus in longing for to work more closely with the ARTs and support them with whatever technical features they need. However, as things are today, the relationship between them are quite vague and it is not organisationally defined in what way this coordinative liaison should be constructed. For some teams, technical requirements are being established from the ARTs which provides a clear path in how System teams should prioritise as well as manage their work to support them. For others, they estimate what the ARTs might need help with, and this is what guides the work forward for the System teams. Consequently, there is a mix between a push force, where System teams receive clear directions and a pull force where System teams are trying to estimate or guess what the ARTs require. Nevertheless, all interviewees in the System teams have expressed an unanimity in that they desire more push forces from the ARTs so that they receive clearer objectives, rather than guessing what work they should do. On the other hand, this vision is not completely shared by everyone in the organisation. For instance, a Product Manager in the ARTs conveyed that there is a huge pressure on the ARTs to both deliver software as well as provide direction for the supporting organisations, thus, own initiatives by System teams to cooperate is well appreciated.

Of course, we should figure out what work needs to be done and consider the System teams role in it /.../ Then we define some requirements and state that we need you [System teams] and your help. But even then, the Product owners of the System teams ask us what are the features that we need. I told him that you already have the feature and now you need to ask us for input! We cannot run everything from the ARTs, they need to have their own features and own requirements! (Product Manager, ARTs)

Furthermore, a Product Owner adds to this subject by discussing that ARTs are more pressured to think about current objectives and it is usually too late for the System teams to prepare or understand what kind of work they should assist with.

They [ARTs] are focusing on what is happens tomorrow or yesterday, they do not have so much oxygen to think ahead. But from my work, I have to look ahead otherwise I will be too late with my own work. (Product owner, System teams)

In essence, the agile transformation has induced a new organisational structure that requires complex interfaces and coordination to function properly, however, as it has been shown, it is

considered not transparent enough or centrally defined in how requirements and work should flow. From one hand, the System teams desire that the ARTs should be more engaged in giving specific objectives, on the other hand, the ARTs feel pressured to deliver, produce software while simultaneously provide direction for System teams. Hence, they desire a self-going supporting entity that provides with assistance along the way. One major reason for this coordination conundrum between the two departments lies in the fact that the ARTs is responsible for delivering a product to the end customer, whilst the System teams strives to support the ART, thus not responsible for a final product in the same sense.

Low awareness about other teams

Moreover, another apparent concern is that there is to some extent a lack in understanding what technical features that System teams actually can support with. Even a Product Manager in the ARTs, did not fully know what technical assistance that the System teams can support with.

I cannot tell what they do. Their names are strange, please name the teams with what they actually do. The real problem is what the heck is the System teams doing with their names?! Please name them as what they are doing. (Product Manager, ARTs)

Each ARTs have a responsible Product Manager that coordinates work amongst different stakeholders. Thus, the Product Manager has a vital role in the ARTs and is responsible for prioritising the work downwards to other Product owners and teams. An implication of such statement is that if the Product Manager is not aware of what technical features which System teams can support with. Subsequently, one may safely argue that there is a little chance that the Product Manager will prioritise for its teams to engage in coordinative efforts with the System teams, as well as synchronise work tasks to find potential collaboration opportunities. Hence, for the one of the ARTs, taking initiatives to collaborate with System teams has shown not to be on the top list of prioritisations. Another manager elaborates on that there is room for improvement for collaboration between the two departments, but believes there is generally a low level of awareness in the organisation of what technical features that the System teams can support with.

I have a quite good knowledge of what the System teams are doing /.../ But all the teams, I do not think they know. All information is available in our intranet, but I do not think they are that aware of what the System teams can fully do. Our teams know to some extent, but it could be improved. (Manager, ARTs)

In addition, AutoCo's agile framework enables teams to name themselves, enabling creative team names with the intention to encourage self-organising teams with high autonomous power. However, having teams naming their own teams such as Mr Y or Team X have two implications. From one side, not requiring management to name teams and allow the teams to name themselves, implies that teams are more considered self-organising, which is an important part of the agile concept. From the other side, in such large organisation, it entails transparency difficulties since there are so many numbers of teams in the organisation.

Thus, if one is seeking assistance, an extra effort has to be made in finding out where and who to actually talk to. Such extra workload is perceived amongst several interviewees is to be contradictory towards the agile philosophy since the intention was to become quicker in reaching collective goals. Additionally, a Manager in the ARTs also explain that due to a high number of teams, diverse expertise and many newly employed within the ARTs, a low awareness of System team is present which consequently affects to what extent System team is being utilised. However, as presented, AutoCo agile framework intention is to facilitate cross functional team and inter-organisational coordination through specific planning sessions. We will now discuss these more in detail.

It takes two to tango

A central feature of the Agile framework SAFe is the program increment (PI) that the whole organisation simultaneously participates in every 10th week. During this week, teams spend a couple of days to discuss and plan the work for the upcoming period. Dependencies, risk and obstacles are being identified and several short iterations (work plans) becomes established for the following 10 weeks. Moreover, the PI-planning week serves as a time to facilitate and boost cross functional coordination amongst the teams since it encourages people to freely go around and talk to each other as well as other departments regarding work related tasks. In spite of this, the purpose of having the whole organisation simultaneously planning at the same exact time is something that is not really understood by everyone in the organisation,

A feedback is that the System teams are supporting the other ARTs, we therefore asked for that the ARTs should have a PI-day and then the System teams have their own, because it should be easy to get a hold of people but everyone is very busy to plan their own work. (Manager, ARTs)

A Team member, further highlights this issue,

When it comes down to the PI-planning, the connection between us and them are not there. Yes, sometimes we have dependencies and we try solving them by communicating between cross functional teams. But during the PI-planning, everyone is focusing on their own things and afterwards, everything is forgotten and gone, people go back and work on their own things. (Team Member, System teams)

Although the PI-planning event is encouraging teams to solve their dependencies by talking to various people, coordination during the PI-planning is perceived as an ambiguity. Some experience that it works well as a forum for joint planning, but at the same, several employees experience that teams tunnel vision on their own plans and do not pay considerable attention to what other teams are working with. An implication of such situation is that teams lack a broader awareness of what other teams in the organisation works with, and this part will be elaborated upon in the next section. One way to enhance synergies and coordination during the PI-planning is through technical product demos, where each department comes and present part

of their work features that each department strives to focus on for the upcoming period. However, these are not mandatory and have not historically been utilised to a greater extent. For instance, a top manager in the Solution stated,

The System teams are invited to the ARTs Demos and they have done some Demos themselves. But unfortunately, a lot of people did not come and listen to the ARTs demo. (Top Manager, Solution)

When asked the respondent why it was that case, the respondent stated,

No, we did not investigate it, so I do not have any data of why they did not come but I guess it was a more overload situation. That [System teams] have their own thing to do. (Top Manager, Solution)

To sum up, a fundamental feature of working agile at AutoCo is the PI-planning week, where all the teams in the solution engage in simultaneous planning for the upcoming period. Nevertheless, a pivotal point has been presented where even though the intention of this feature is to enhance coordination and aligning teams, employees in System teams still feel a sense of distaste towards having everyone planning at the same time. In addition, inter-organisational coordinative efforts such as technical product demo presentations, had the intention to bring departments closer to each other but these have historically not been utilised to a greater extent.

Lacking the Bigger Picture

A central phenomenon discussed so far is that there is a shattered comprehension of how to work in the new organisation. The agile transformation has introduced a completely new way of working and the pace of the company have recruited a large amount of externally recruited consultants that do not have a prior background in the organisation. In addition, the agile transformation has divided the organisation into multiple different layers, departments and teams. Each department have their own purpose and planning sessions which do not always or necessarily render into desirable alignment on a higher level in the organisations. Especially for System teams, being aligned and working more closely with the ARTs have shown to be a key concern. Furthermore, several employees in System teams express a worrying concern in not understanding how their daily work is contributing towards the overall strategic direction of the firm. As an example, an employee state;

I know what I need to do, I know what my team needs to do and I can understand System teams role. But I am not sure how that affects where the firm is heading to. It makes it really hard to understand on how my work help the organisation. I just know that I build a framework, but I do not know if we add any value to the product. (Team member, System teams)

and another respondent said,

I would like to understand the overall direction of the firm and see how my own work relates to others. Here is my work, but who should I talk to and how does my work relate to others and how does my work help them. Establish an overview over the System teams then we can get a bigger picture of the over all.
(Team member, System teams)

Although the direction is understood on a team level, several respondents experience a lack of connection to the direction of the firm. More importantly, understanding how their daily work is contributing to the end product is something that not everyone fully understands. While one could argue that such phenomenon could be experienced in many large organisations with similar attributes with thousands of employees and multiple cross functional departments working together, it becomes particularly interesting in this case since the agile transformation had the intention to unify people into purpose driven teams with a shared vision. Nevertheless, amongst several employees, a lack of understanding the overall purpose and direction is still evident. Comparing to before the transformation, certain employees even expressed that this connection was much more present in the old organisation and some managers today lack in communicating the vision of the firm.

Quite often, we do not see where we fit in the whole picture, that is a drawback and it maybe affects your ambition. Sometimes you just think about what you are doing, but it is not really included in the overall vision or how it will be used. Before the agile transformation, we had more strict roadmaps, directions and I do not feel that this is the focus anymore. I do not know how managers work with that, but this is my personal feeling. It is more fun when you know where things are going to end up. (Team member, System teams)

and also,

Some visual timeline would be good to know where we are headed, but I do not see that today, maybe I have too high expectations on management. When you wake up, you should know where we are headed and how /.../ I know that they have their Webcasts [Virtual presentations at AutoCo] but how does that affect me? I just hear words, but it does not mean so much since I do not know where the company is going. (Team member, System teams)

The situation of not understanding how one's daily work is connected to the overall strategy is to a higher extent pertinent for System teams, since they do not directly produce a product but is instead delivering support for the ARTs. However, we wish to highlight that there is not a lack of information regarding higher corporate goals and visions. AutoCo with the new agile framework contains visions and purposes at all levels in the organisation. Nonetheless, due to the that the current organisation is currently so fractured into smaller teams that have their own goals, some teams know their purpose but struggle to understand how their work connects to

others and the direction of the firm. Thus, corporate strategies exist but it remains an enigma with how this become translated downwards and understood by everyone in the organisation.

In sum, the agile transformation had the intention to enable purpose driven self-organising teams, but our findings show how employees perceive a lack of connection to each other as well as failing to understand how one's daily work is connected to the final product. We turn into a new page to discuss these empirical findings by analysing it from a coordination theory perspective.

Discussion

The aim of this study has been to shed light on coordinative tensions which arises from working large scale agile in an organisation that is not entirely working with software development. Empirical findings in this research have highlighted three key organisational ambiguities where coordinative tensions are present. Firstly, a shattered understanding of the organisations way of working have shown to be evident, in terms of not understanding the real purpose of the new agile practices. Secondly, the findings suggest there are coordinative tensions such as lacking a unified way of coordinating between the different departments. Lastly, a sense of having a bigger picture is not evident, where certain employees feel a lack of association regarding where the company is headed as well as a limited connection in how individuals work is connected to each other. We now turn into discussing our case by drawing on a coordination perspective.

An ambiguously defined relationship

The organisation consists of multiple divisions that require complex coordinative interfaces to function properly. Interestingly enough, our research showcased how the two different departments are characterised by not having a centrally defined way of coordinating activities with each other. Occasionally, System teams receive clear communication in terms of technical objectives from the ARTs, that aid with understanding what the ARTs actually require assistance with. At other occasions, the System team functioned as a pulling organisation, trying to extract requirements from the ARTs by utilising formal coordinative mechanisms. Such as sync-meetings to prepare for future work, and informally, by daily communication with the team members in the ARTs, to understand what tasks they are working on. Consequently, one may argue how the organisation becomes subject to an ambiguous state of coordinative liability, where each department have shown to have high coordinative capacity to sync objectives and provide guidance for their teams. However, when it comes to inter-organisational coordination, the relationship in how the alliance between a supporting department and the receiving organisation should coordinate their activities remains an enigma to both actors.

Following Okhuysen and Bechky (2009), such findings are in contrast with their conceptualisation of the three integrating conditions for effective coordination. Seemingly, accountability is achieved from having clearly defined communication channels and routines for each organisational actor (Okhuysen & Bechky, 2009). However, our case showcased how

the two departments are characterised by a vague relationship in terms of how they should coordinate their tasks with each other. By not having established responsibilities in terms of coordination, an implication is that it disables frequent information sharing which then undermines the level of accountability in the organisation. Such situation also leads to a slippery slope where predictability simultaneously becomes negated since the interrelated actors are occasionally not able to foresee upcoming work tasks. Lastly, lacking defined routines in how the two interrelated actors should coordinate with each other disables individuals to fully make sense of what role everyone plays in the organisation. This will be analysed more in detail in the last section of the discussion.

This complex situation goes in line with the more recent research of RCT. Which argues that relational aspects between coordinative actors are essential when a standardised way for coordinating with each other is vague (Gittell, 2011). One rationale for this is how, hierarchical structures like standardised routines and top down plans has traditionally reduced the need for strong relationship in terms of coordinating activities, since they can instead rely on the formal structures in place (Gittell, 2000). However, AutoCo has adopted the agile framework SAFe which is characterised by self-organising teams. Thus, as the empirical section has shown, coordinative efforts unfold much more under more sporadic arrangements. This is in line with Faraj and Xiao (2006) reasoning that coordination is viewed as a continuous and ongoing accomplishment. Where the nature of how the two entities coordinate with each other, varies from day to day depending on what technical features they work on. Hence, it indicates that a significant effort is required to not only sustain but enhance the interrelated relationships between the ARTs and the System teams.

So far, we have discussed the importance of RCT when coordinative structures are highly ambiguous, but how does the key concepts of RCT materialise in the organisation? A central concept of RCT is frequent communication, which is an essential tool in order to reach effective coordination in organisations (Gittell, 2006; Claggett & Karahanna, 2018). In this case, frequent communication did not occur as often as the System teams desired. However, as previously demonstrated, a formal definition on how the two divisions should communicate is absent. Subsequently leading to infrequent and sporadic communication and resulting in vague accountability between the two parties. For instance, this was evident when one of the product manager in the ARTs expressed a demanding pressure to provide direction for the System teams, while simultaneously focusing on steering the direction of its own team.

Interestingly enough, at the same time, majority of the respondents in the System teams expressed a strong desire to engage in more frequent as well as more updated communication with the ARTs. Following the elaboration of Gittell (2006), lacking a frequent dialogue between two coordinative entities may translate into what Dougherty (1992) refers to as separate coordinative “thought worlds“. Where each organisational division have become so concerned with their own goals and direction, that in practice, it translates into having separate rationales on how coordinative efforts should become realised. For further illustration, the same manager from the ARTs explicitly stated that, instead of constantly asking for direction, System teams should be more directly engaged with finding their own ways to adapt to the current tasks of the ARTs. At the same time, the System teams express that they are the ones who are there to support the ARTs, but need guidance in what technical features they should work with.

Drawing on the conceptualisation of “thought worlds“, an implication of this is that each division may overlook possible coordination opportunities by prioritising their own interests and believing in their own principle for how coordination between them should be constructed (Dougherty, 1992; Gittell, 2006). Furthermore, this is in contrast to Kellogg et al. (2006) conceptualisation of trading zones. For a trading zone to become enacted, two organisational entities with divergent interests realise that they mutually benefit from collaborating and sharing knowledge with each other (Kellogg et al., 2006). However, in this case, both parties sometimes portray a situation where they have different ideas on how coordination should become realised. Consequently, rather than reaching out and finding new ways to collaborate, such situation encompasses how each division is drawing away from a mutually beneficial coordinative space such as a “trading zone“ and instead operating in the realm of separate “thought worlds“. Since rather than finding new ways to become synchronised, each department sustain their own idea on how coordination between them should work. Which in turn, consequently undermines the relationship between them and inhibits effective coordination.

This also confirms Reagans et al. (2005) ideas of decreased familiarity, where effective coordination becomes challenged when individuals lack in gaining a stronger bond to each other. In addition, such situation also exhibited how employees do not only feel a disconnection towards each other, but also experience not being tied together by common goals. Having shared goals in the organisation act as the energetic drive that motivates individuals in their daily work (Chow & Chan, 2008; Gittell, 2006). Without experiencing shared goals with other employees, individuals may lose their motivation and affect to what extent they engage in cooperative behaviours (Gittell, 2006). In AutoCo case, this was evident amongst several employees in the supporting organisation since they experience a sense of demoralisation in how they are currently being utilised.

Moreover, effective coordination relies upon sharing knowledge, i.e. having employees understanding how their interrelated tasks are connected to each other (Gittell, 2006). Thus, by not engaging in frequent communication, shared knowledge in the organisation becomes challenged through employees not understanding how their tasks are interrelated to others organisation (Gittell, 2006). Empirically, this was present in terms of how several employees experienced a lack of understanding of how their daily work was connected to the tasks that the ARTs were working on. Thus, such situation where employees in the System team’s organisation do not feel a strong bond to the ARTs, act as a negating element for effective coordination.

In sum, we have discussed how the organisation is described to be in an ambiguous state of coordinative liabilities, characterised by not having a standardised way to coordinate activities between System teams and ARTs. Thus, so far, we have discussed and drawn connections to streams of coordinate literature to analyse tensions related to relational aspects such as frequent communication, having shared goals and shared knowledge which may constrain effective coordination. By not having a defined relationship, we have exemplified how the two division are branched into two interrelated yet distinctive “thought worlds“ with their own rationale on how coordination between them should be realised. Furthermore, by drawing on Okhuysen and Bechky (2009), we have showed how such situation indicates a

negative effect on the three integrating conditions for effective coordination. We now turn into discussing how newly introduced coordinative mechanisms has induced a sense of confusion amongst employees.

Differences in making sense of the agile way

The agile transformation at AutoCo has introduced a wide range of new coordinative routines in terms of agile practices. Routines provides the necessary expectations for employees on what tasks each individual will focus on, thus providing with a higher degree of predictability (Feldman, 2000; Nelson & Winter, 1982). Although the rationale behind adopting agile practices was to mainly increase coordinative flexibility and efficiency, our findings showed a rather conflicting situation. Where certain employees experience a rather shattered view on the functionality and effectiveness of these new routines. In line with Okhuysen and Bechky (2009), a critical argument they make is that the three integrating conditions strengthen and support each other to establish effective coordination. However, in this case, a quite contrasting situation appears, whereas predictability becomes challenged since certain employees no longer rely on the existing routines in the organisation. This was empirically present when several employees, including managers, perceived some meetings and routines to not provide real value and did occasionally not see the purpose of even conducting them.

Moreover, accountability enacts through routines, which act as a forum for information sharing and enables employees to become accountable towards each other by understanding who is responsible for each task in the daily work (Okhuysen & Bechky, 2009). In spite of this, our findings have illustrated several examples that counteracts with the level of information sharing. This was exemplified when several employees talked about how they decided to occasionally skip daily stand-up meetings since they did not see the real purpose of these meetings. During daily stand-up meetings, employees share knowledge with each other regarding what tasks each person will focus on, which enables frequent information sharing, thereby establishing accountability towards each other. However, when individuals skip meetings or not fully believe in the real value of current coordinative arrangements, then it contributes to a reduced level of information sharing which undermines the coordinative efficiency that these routines intended to create (Feldman, 2000; Nelson & Winter, 1982; Bechky, 2003). We find that such reasoning is in line with our findings whereas the interrelated organisational routines such as product demos, which has the intention to enhance synergies across the departments was not being utilised to a greater extent. An implication from such situation is that the accountability becomes negated since the actors do not partake in the routines which were intended to facilitate cooperation between the ARTs and the System teams.

Additionally, this follows Otte-Trojel et al. (2017) reasoning that organisational proximity, i.e. that employees which do not understand current coordinative structures act as an inhibiting element for effective coordination. Which was empirically shown in low motivation from employees in agile practices. In addition, when it comes to the daily stand-up meetings, one of the interviewees stated that some team members would fall asleep, rather than providing constructive feedback. Accordingly, some employees that did not really believe in the real value of certain meetings showcased a lower level of engagement and motivation. Lastly, it also negates the common understanding since individuals do not partake in frequent

information sharing which undermines how employees feel connected to each other in terms of interrelated tasks (Okhuysen & Bechky, 2009). We describe this phenomenon as a state of organisational disorientation and it will be discussed more in detail in the next section of the article.

In the same vein, RCT suggests that strong relationships rely upon frequent communication and knowledge sharing, which helps to achieve collective goals by strengthening the relationships between coordinative actors (Gittell, 2006). However, as discussed, individuals have a sense of distrust in how these routines should be carried out and by not fully engaging in the agile practices, subsequently, the extent which the relationship between employees are built becomes challenged. Furthermore, having a problem-solving mindset is considered essential for effective coordination (Stevenson & Gilly, 1993; Gittell, 2011). But in this case, our findings may explain how inadequate belief in communicative efforts leads to a reduced state of constructive feedback. To illustrate, one of the managers expressed how the retrospective sessions were conducted as formal procedures without any constructive outcome, where he explicitly said that they conduct feedback sessions but “do not give a shit” to do anything about it. Hence, effective coordination becomes challenged, whereas, the interest, attitude and variety in how these agile practices are performed, have shown to restrain communicative efforts and do not foster a problem-solving mindset (Stevenson & Gilly, 1993; Gittell, 2011). Lastly, not understanding the true purpose that coordinative mechanisms bring to the organisation, act as a coordinative blockage for encouraged and engaged employees (Okhuysen & Bechky, 2009), that instead could potentially contribute to a higher degree of value in the agile routines. More specifically, retrospective sessions, that should according to the agile framework manifest as a forum for feedback and rejuvenation, occasionally became enacted as a formal coordinative procedure that individuals aimlessly followed.

To sum, we have discussed various implications for the coordinative routines that comes with working large scale agile. A central point to be made is that agile routines such as daily stand-up meetings or retrospectives have shown to require a higher level of engagement from employees, such as believing in the real purpose and actively contributing with the intention to improve the daily work. In relation to previous literature, when not believing or not understanding the real value of certain routines, the level of accountability and predictability becomes challenged through infrequent information sharing. Evidently, our case showcased how individuals have diverse opinions on the real value that these new routines may enable. For some teams, the agile routines made perfect sense and brought great value when they became utilised, however for others, agile practices enacted as formal procedures with very little belief in how they were actually beneficial. Consequently, teams that utilised the agile routines more frequently enables a higher degree of accountability, information sharing and communication which boosted coordinative efforts in the organisation. Now, we move away from discussing the impact of agile routines on coordination to discuss the implications of how the organisation is fractured into multiple teams.

In a state of organisational disorientation

Our findings have shown that the agile transformation had the intention to stimulate coordinative flexibility and efficiency. Although several respondents experienced that the agile transformation have benefited their daily work, coordinative tensions remain with how the new organisation is structured. The new organisation is divided into many teams and a recurring theme was how employees lack a shared connection to each other. It is important to note that this was evident when it comes to employees seeking to understand how their team are connected to other teams and not within their own team. Thus, an important finding of our case is that this situation is mainly applicable on a inter-team level i.e. between teams, rather than intra-team level. Consequently, we arrive at an analysis where the organisation is characterised to be in a decoupled state, where coordination is shown to be very effective within teams. But when it comes to inter-team coordination, we find that employees find themselves in a state of organisational disorientation. From such standpoint, on a team level, teams have well defined plans, routines and aligned expectations of what work they should do in relation to each other.

In line with Okhuysen and Bechky (2009) reasoning of effective coordination, such situation facilitates a flourishing coordinative state where all three integrated conditions become present. Accountability enacts through formal mechanisms as the teams have daily stand-up meetings, explaining and informing about their plans for the daily work with each other (Okhuysen & Bechky, 2009). Predictability unfolds simultaneously as these activities help to create expectations on work tasks and responsibilities among the team members (Okhuysen & Bechky, 2009; Rico et al., 2008). Consequently, having a common understanding is strengthened by direct information sharing through formal mechanisms (Okhuysen & Bechky, 2009; Bechky, 2003). Thus, employees within teams understand where the work is headed and they trust, as well as they rely on the collective group to accomplish the work. This direct form of information sharing enables effective coordination since it is achieved through exchange of knowledge and collaborative relationships between two parties (Gittell, 2011). However, when it comes to how employees interact and coordinate outside their own teams, coordinative tension emerges. Empirically, this was present in two ways, a) individuals did not understand how their own work contributes to each other and b) individuals could not relate their own work tasks to the overall direction of the firm.

Following Okhuysen and Bechky, (2009), ensuring a common understanding is essential for effective coordination since it allows individuals to understand how their work is connected to each other (Okhuysen & Bechky, 2009). It further enables actors to make sense of the overall direction of the firm and provides with a holistic overview of how each actor interdependent tasks are connected (Bennis, 1989). However, as our findings showed, the agile transformation has divided employees into self-organising teams, which provides a strong internal common understanding. But when it comes to understanding the interrelated tasks of teams in other departments, the common understanding has shown to be diminished. A specific example of this was how one employee expressed that he felt a disconnection to how his daily work was connected to others in the organisation, even experiencing that the connection was stronger in the old organisation. Such situation undermines to what extent accountability between organisational actors can be built since it becomes harder to understand who is responsible for what part of the daily work (Okhuysen & Bechky, 2009). It also challenges how

predictability is achieved due to employees being less knowledgeable regarding each other's work. This was evident in several statements from different employees in the ARTs which stated that they were unsure of what the System teams actually work with. Such situation also confirms the idea of familiarity, i.e. the extent to how close organisational actors are in form of reduced knowledge gaps is a crucial ingredient for achieving predictability in an organisation (Okhuysen & Bechky, 2009; Reagans et al., 2005).

In the same vein, our case follows Gittell's (2006) reasoning that successful coordination relies on effective knowledge sharing between coordinative actors. To illustrate, one product manager in the ARTs, responsible for coordinating activities between the System teams and the ARTs, had little to no idea on what some teams in the System teams actually worked with. Thus, the level of shared knowledge, in terms of awareness of each team's work expertise, has shown to be quite vague. Accordingly, it acts as a nullifying element on how frequent the two departments coordinate with each other. Such situation also follows in line with an organisational challenge which Otte-Trojel et al. (2017) refers to as technological proximity, where increased knowledge gaps between employees leads to reduced cooperative behaviour. Additionally, another implication that is related to technological proximity is how self-organising teams at AutoCo leads to a sense of confusion. To illustrate, a manager in the ARTs believed that System teams have strange names which do not reflect the technical expertise that they have. As an implication, collaboration opportunities became reduced since it was required an extra effort to figure out who was responsible for a specific task. Moreover, our case has not only showcased how employees are not connected to each other by a lacking a common understanding of the interrelated tasks, but it also shows how employees are not being tied together in terms of shared goals. In line with RCT, organisations that strive for effective coordination need to emphasise connecting employees together with the shared goals of the organisation (Chow & Chan, 2008; Gittell, 2006).

Nevertheless, it was prevalent how several employees felt a detachment to the organisation's direction. For instance, one of the employees expressed how he knew how his daily work is connected to others in the teams, but not to AutoCo's direction, even questioning himself, if he was contributing at all. This also confirms Okhuysen and Bechky (2009) argument that having common understanding amongst employees provides the necessary motivational drive that enable coordination. An implication of such situation could be conceptualised as what Gittell (2006) refers to as becoming alienated. Whereas, when employees do not feel tied together by collective goals, then they may experience a detachment towards others. Resulting in a sense of identity confusion, in terms of questioning where they fit in the organisation. This was exemplified in a quote by one the employees who said that, in spite that managers presenting various projects on webcasts, it was still hard to understand how his daily work contributes to such project. It is important to note that not everyone experiences a state of confusion, where it is hard to understand where the organisation is headed. Nevertheless, an interesting point remains, since for those that do experience a disconnection to the product, such situation acts as a coordinative tension. Since lacking strong relationships in terms of having interrelated tasks and having a connection to the final product have shown to demoralise actors and provide less stimulus for engaging in cooperative behaviour.

We have now discussed the main findings of our case in relation to three theoretically driven themes developed from previous literature on coordination. To illustrate, based on above discussion, we have synthesised our main findings of the discussion into table 3.

Coordinative Tensions	Summary of the findings		
An ambiguously defined relationship	The ARTs and System teams have fundamentally different objectives.	There are no standardised way on how the two departments should coordinate activities with each other.	Departments enact in different “thought worlds” in how coordination between them should be constructed.
Differences in making sense of the Agile way	Varied utilisation of the agile routines among the teams.		Routines occasionally conducted as formal procedures with low levels of engagement.
In a state of organisational disorientation	Intra-teams: employees have a collective identity through frequent information sharing which enables a higher degree of accountability in terms of interrelated tasks.	Intra-teams: efficient coordination is facilitated through actors being relationally tied together in terms of self-organising teams with shared goals.	
	Inter-teams: coordinative efforts become undermined by employees lacking knowledge and awareness in terms of what expertise other teams have.	Inter-teams: coordination becomes undermined through lower levels of motivation ascribed to a detachment to the organisation's direction.	

Table 3. A synopsis of the key findings.

This table illustrates the coordinative tensions of this research paper. Three coordinative tensions in form of an ambiguously defined relationships, making sense of the agile way and in a state of organisational disorientation, have been discussed. Firstly, we started by discussing the how the two departments find themselves in an ambiguously defined relationship in terms of coordinative liabilities, where the nature of how they should coordinate and communicate between each other is highly ambiguous. Specifically, we discussed how such situation undermines effective coordination by reduced levels of frequent communication and shared knowledge. Secondly, we discussed how agile routines impacts coordination and found that there is a fractured understanding in the real value that these new routines can provide. As a result, we discussed that teams that do not believe in the real value of routines nullify coordinative efforts by conducting them with low levels of engagement, or even skipping them. Lastly, we discussed how the agile transformation has divided the organisation into a state of organisational disorientation where employees experience a detachment to other teams as well as how their daily work is connected to the final product.

A main implication of our findings is that when it comes intra-team coordination, employees experience a high degree of closeness to each other which motivates them in their daily work. However, when it comes to inter-team coordination, we find that certain employees find themselves in an alienated state by not understanding how they are connected to others in the organisation. Thus, we find that our case is characterised in a decoupled state between how coordination unfolds on an intra-team versus inter-team level. Seemingly, our finding demonstrates how a large scale agile organisation encourages coordinative flexibility by enabling self-organising teams, frequent communication and decentralised management structures. However, as discussed, it has simultaneously introduced new unintended coordinative tensions that emerge between different teams.

A compelling thought experiment is whether our findings are a direct result of an agile organisation, or if these issues are just caused by a large organisation with thousands of employees and bureaucratic structures. That being said, we argue that regardless of organisational arrangements, the discussed tensions of this paper are still prevalent in an agile organisation and remains to be further scrutinised. We now turn to conclude our paper and discuss the implications of our findings in relation to previous, as well as future research.

Conclusion and implications

This paper's ambition has been to answer the question; *How does coordinative tensions unfold in a large agile organisation?* By drawing on previous literature of coordination we have contributed with new insights in several ways. Empirically, we have been able to contribute with new empirical research in how coordination unfolds in a large scale agile organisation that is not entirely a software developer. Evidently, our findings demonstrate that coordination in a large scale agile context is not an easy task and is coherent with previous empirical research which displayed that organisations face coordinative challenges when working with large scale agile methodologies (Dikert et al., 2016; Dingsøyr & Moe, 2014; Hoda & Murugesan, 2016). With respect to Dikert et al. (2016, p. 106) statement "research is seriously lagging behind" and we have now responded to this call with new empirical research to shed light on coordinative tensions on a firm working large scale agile which is exclusively a software developer.

More specifically, we found that AutoCo is faced with three coordinative tensions when working agile. An ambiguously defined relationship has been discussed, whereas coordinative actors suffer from infrequent communication due to a vaguely defined way of coordinating activities with each other. Secondly, we discussed how a differentiated understanding of the agile routines leads to a varied utilisation in how effective coordination plays out. Lastly, we portrayed how certain individuals experience a sense of disorientation in the new organisation which is characterised by self-organising teams.

In addition to an empirical contribution, our paper addresses a theoretical gap in previous literature by conceptualising coordinative tensions that arises in an agile context. Accordingly, we provided new theoretical insight by revealing how coordination unfolds in a relatively modern organisational structure characterised by decentralised management systems and self-organising teams. In this way, we managed to build on previous inquiries of RCT, which have called for a scrutinisation to understand how organisational structures encourage and restrain relational coordination (Gittell, 2006). Specifically, we focused on contributing to this theoretical domain by analysing tensions that arise in an agile context. By doing so, we also managed to utilise and build upon Okhuysen and Bechky (2009) integrating conditions for coordination by providing a conceptualisation on not only discussing how the integrating conditions may be achieved, but also showcase how tensions may restrain or mitigate the integrating conditions. Interestingly enough, the intention behind the agile transformation has been to enhance coordination efforts, but our study has managed to discuss how coordinative tensions emerge as an unintended effect of the current organisational arrangements. That being the case, our study has brought awareness to the complex nature of agile organisations with

emerging coordinative tensions. Thus, we argue that organisations as well as researchers that wishes to understand how coordination unfolds in an agile context may utilise our study to understand as well as develop the topic further.

A main implication of our findings is that coordination in AutoCo enacts in a decoupled state, where teams have a strong internal coordinative functionality by being tied together by strong relationships and shared goals. However, when it comes to inter-organisational coordination, coordinative tensions in form of ambiguously defined relationships, making sense of the agile ways and organisational disorientation persist. A central point to be made, is that although agile methodologies is a modern organisational trend with the aim to facilitate coordinative efficiency and flexibility, it has shown to not be a managerial panacea that magically solves all problems in an organisation. Instead, our ambition with this paper is to plea to future researchers and business managers is to not fall in the trap to aimlessly believe that agile methodologies may solve all coordinative complexities in organisations. Instead, we argue that coordination in an agile context should be construed as an ongoing relational accomplishment which is highly dependent on the interrelated relationships and the contextual factors. By doing so, organisations can reap the real benefits of agile methodologies by embracing the relationships between individuals, which then boosts coordinative efforts in the organisation.

A limitation of this study is that as this paper is a qualitative single case study, we believe that our findings is not as generalisable compared to quantitative research. Instead, we have chosen to trade off generalisability with accuracy to provide comprehensive details and rich explanations for how coordination unfolds in this specific case. In addition, as this is a single case study, research remains relatively unexplored in how coordination unfolds in AutoCo vis á vis other similar organisations. To mitigate this, we suggest comparable case studies to investigate how relatable and applicable our results are in other large scale agile contexts. Moreover, we find it of equal importance to conduct similar research in cross-industries as well as similar industries to gain more insight in how coordination differs in different agile contexts. Another limitation that we wish to acknowledge is that AutoCo has recently transformed to working agile. Thus, they are currently in a post-transformative state where new changes and improvements are continuously happening. Consequently, the coordinative tensions discussed in this paper may or may not be present in their future state. To address this issue, we suggest that additional research in forms of longitudinal studies is required to gain further insight in how coordination unfolds in their context. Lastly, for additional future research, we argue that, based on our findings as well as review of previous literature, we believe that agile methodologies bring a wide array of changes to organisational dynamics and coordination is only a mere drop in the ocean. Other aspects to study are how leadership, learning and recruiting unfolds in a large scale agile context.

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