MASTER THESIS

MSc Business Administration - International Management & Consultancy

Employees' perspective on the impact of agile implementation on knowledge sharing: A qualitative study in a large multi-national company

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Abstract

The aim of this study is to explore how a change process towards agile project management can impact employee knowledge sharing in an IT department of a large multi-national company (MNC). Possible areas of impact are discussed using Nonaka's (1994) dimensions of knowledge, integration mechanisms as seen in Zeng et al. (2018), inhibitors and enablers (Gaur et al., 2019) and Hobfoll et al. (2018) conservation of resources theory. To gain insights on these topics, open-ended interviews were conducted with 15 employees of a large MNC that is going through a change process towards agile project management. They are supplemented occasional field notes by the researcher. Through this employee-focused micro-foundational approach (Abell et al., 2008), insights were gained and were analysed using the Gioia (Gioia et al., 2013) method. Results of the research contribute towards how a large MNC department can differ from the firm and therefore inhibit or enable knowledge sharing. Additionally, results contribute to the prominent role of socialisation and how a change process can accelerate the removal and replacement of centralisation. A re-instated knowledge sharing process with the headquarters, a mindset of sharing knowledge and more efficient communication processes highlight that a change process can impact employee knowledge sharing in an MNC. Lastly, the study shows how in specific agile context employees can be passive towards the change process towards agile yet show no lack of change resources to deal with the change. In total, 7 propositions are made regarding knowledge sharing, change process and agile. These and other findings emphasise the multifaceted nature of knowledge sharing. To prevent overgeneralisation, this topic requires broader, larger, and quantitative future research.

Key words: Knowledge, knowledge sharing, multi-national companies, change process, agile project management

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1. Introduction

Today, multinational corporations (hereafter MNC) are a fundamental part of society and are almost impossible to be unacquainted with. Some of these MNC companies that still exist today, such as Goodyear tires, date back all the way towards 1898. Traditionally speaking, MNCs could compete in other countries against national companies. Their main competitive advantage is that they have the possibility of using economies of scale or differences in goods, labour, and markets (Hansen & Nohria, 2004). Through this, MNCs were always a step ahead of the competition and were able to grow even more. Nowadays, the landscape of companies has changed. In most industries we find multiple MNCs competing against other global companies and MNCs instead of local national companies. Because of this reduction of opportunity of advantage, MNCs need to seek other sources of competitive advantage. Hansen & Nohria (2004) describe such a source: the ability within the company to collaborate successfully by sharing knowledge. Through sharing knowledge in the firm, "multinationals can stimulate and support collaboration and will be better able to leverage their dispersed resources and capabilities' (Hansen & Nohria (2004, p.22). Other goals such as increasing efficiency are also tended to. Through agility and the usage of agile project management, organisations try to increase their competitive advantage (Annosi et al., 2020).

It is therefore no surprise that researchers have studied MNCs and how knowledge sharing is seen in those companies. Professional and academic researchers have proposed that knowledge and sharing thereof is a key source of competitive advantage, such as early works of Grant (1996). In this 'knowledge-based' view of a firm or MNC, these organisations exist because of their ability to create and share knowledge within the firm more efficiently (Gaur et al., 2019).

To study knowledge, the characteristics of knowledge are explained. Two main dimensions of explicit (easily codified and communicated knowledge) and tacit (hard to codify and specific knowledge) are the main characteristics. Since tacit knowledge is embedded in organisational processes and individuals (Gaur et al., 2019), it is found to be the valuable knowledge that offers MNCs competitive advantages. At the same time, this complex knowledge which involves individuals' beliefs, viewpoints, skills, and know-how to apply them provides challenges as well. Especially sharing this knowledge with others is extra difficult, since it requires some form of de-contextualisation or integration mechanisms to establish a common ground (Dennis & Vessey, 2005).

Employees share knowledge through three mechanisms (Zeng et al., 2018) These are centralisation (coming from the HQ), formalisation (codifying process and routines), and socialisation (social influence). Especially the last two of them were found to positively facilitate knowledge sharing in MNCs. Certain factors inhibit/enable knowledge sharing through employees. Gaur et al. (2019) identified Country-level factors (e.g., bureaucratic bottlenecks), firm-level factors (e.g., direct supervision/control) and individual-level factors (language, willingness, and ability) that inhibit or enable knowledge sharing mechanisms.

This leads to the conclusions that knowledge sharing in MNCs is quite a complex phenomenon and research, therefore, is not necessarily straightforward either. Zeng et al. (2018) note that the conclusions found are too simplified for the complex empirical findings, or a 'stylized fact' (p.429). There is need for more study into identifying where the boundaries of these findings of facilitating knowledge sharing are. Hitt et al. (2016), for instance, found possible differences between MNCs and emerging MNCs (eMNCs). These eMNCs differ from MNCs as they are characterised by "dynamism, institutional weakness and resource constrains" (p. 67). Furthermore, eMNCs are found to pursue unique goals such as learning new management skills (Child & Rodriques, 2005). This highlights how knowledge sharing

might differ between MNCs and eMNCs and adds to the oversimplification argument of Zeng et al. (2018).

Therefore, this research sets out to investigate whether there might be other boundaries that might impact knowledge sharing in MNCs. This thesis aims to research how knowledge sharing is seen during a change process towards agile project management. Here, MNCs are tasked with implementing agile project management in order to tackle the challenges of being more efficient and allowing for better digital (international) collaboration. In this research, the IT department of the MNC studied is changing towards an agile model that is very similar towards the Spotify-model. The international HQ implemented this top-down in IT departments worldwide.

While most research focuses on how organisations implement and react to change, little attention is paid to employees (Judge et al., 1999). Since then, much of the academic research on change processes focuses on how an organisation prepares, implements, and reacts to change (Oreg et al., 2011). The consensus that successfully dealing with change lies within the experiences of change recipients (micro level) has been agreed on by researchers after (e.g., George & Jones (2001); Bartunek et al., 2006; Sonenshein & Dholakia, 2012). Therefore, this study sets out to use the micro-foundation approach (Abell et al., 2009) and study this topic from an employee perspective.

The goal of this research is to study the various elements of knowledge sharing in a MNC during change, by especially studying how employees share knowledge during a change process towards agile project management.

Therefore, the following research question is formulated:

"How does the organisation-wide adoption of a change process towards agile project management impact employee knowledge sharing in an IT department of a large multi-national company?"

The report starts with an extensive theoretical framework on various elements of knowledge sharing, change processes and employees. In the methodology section, the case company and the sample are explained in detail. The report continues to discuss data collection through open-ended interviews and field notes. Using the Gioia method, data was structured for analysis. Following that, the result section contains the results which are discussed through the four aggregate dimensions. Seven propositions are made regarding the topics of change processes towards agile, knowledge sharing and the role of employees. Afterwards, the academical and practical relevance is discussed followed by limitations of the research, possibilities for future research and a conclusion.

2. Theoretical framework

2.1 Knowledge sharing in MNCs

Knowledge sharing is the process through which organisational actors (people, teams, units) exchange, receive and are influenced by the experience and knowledge of others. The transferral of knowledge, either internally between organisational units or externally, between different organisations, has arisen as a strong underlying theme in strategy and organisation research (Van Wijk et al., 2008). Firms need to acquire and transfer knowledge as they seek to develop new applications and create competitive advantage (Henderson & Cockburn, 1994).

A MNC has assets and facilities in at least one other country than its home country. Almeida et al. (2002) describe MNCs as "an international network that creates, accesses, integrates and applies knowledge in multiple locations" (p.148). According to Gupta & Govindarajan (2000), MNCs exist to overcome inefficient external knowledge-based markets. Zeng et al. (2018) highlight knowledge transfer in MNCs as their 'raison d'etre' and Kogut & Zander (1993) state that MNCs deliberately create social communicates that enable efficient knowledge transfer. Therefore, by creating value through knowledge, MNCs can stimulate and support collaboration for knowledge sharing and in turn will be better able to leverage their resources and capabilities (Hansen & Nohria, 2004). Knowledge sharing has therefore been accepted as one of the competitive advantages of modern MNCs (Hansen & Nohria, 2004).

Knowledge sharing in MNCs is studied in literature in various ways. The main topics concern how knowledge sharing occurs (and to what extend) and how it can influence performance (effectiveness/efficiency). Ambos et al. (2006) for example found that there is no significant evidence for the fact that the amount of knowledge shared equals or exceeds the benefits of sharing such knowledge. Building on this, Davenport & Prusak (1998) also defined transfer effectiveness as a term that refers to the extent that knowledge shared is adopted and used by the recipient. This leaves the notion that the outcome of knowledge sharing should not only be the knowledge shared, but that knowledge must be implemented into the operations of the subsidiaries for knowledge sharing to be successful.

Moreover, researchers describe the direction of knowledge sharing (knowledge flows). While it is beyond the scope of this thesis to elaborate on all the literature concerning knowledge flows, there is a certain degree of categorisation However, it is not always the case that subsidiaries are only receivers of knowledge (inflow): they can also engage in knowledge generation and sharing it across an MNC (outflow) (Peltokorpi & Yamao, 2017). This caused researchers to adopt a 'subsidiary viewpoint' that looks at how knowledge flows in and out of a subsidiary. Arguments for this approach are that subsidiaries play different roles in an MNC and therefore have different kinds of knowledge flows (e.g. Gupta & Govindarajan, 1991; Noorderhaven & Harzing, 2009).

Becker-Ritterspach (2006) criticizes this subsidiary viewpoint for knowledge sharing: the context of knowledge sharing is too dynamic and is influenced by all kinds of different characteristics. Instead, Becker-Ritterspach (2006) calls for a 'knowledge viewpoint' where more attention is given towards what happens to the knowledge, plus the receiving context (when knowledge is transferred and integrated into a new environment). Step by step, the viewpoint of knowledge sharing is being increasingly specified to better reflect reality.

In other knowledge sharing research, Björkman et al. (2004) researched that through inter-unit visits, international teams and training involving international units positively influence knowledge outflow. Persson (2006) found that temporary teams with members from different

subsidiaries had better knowledge flows compared the rest of the subsidiaries. This makes an argument for the fact that the employees involved in practices such as these examples have different knowledge flows than employees who do not participate in such practices.

As a result, in the years after, literature focuses on MNCs as a 'social community' (Noorderhaven & Harzing, 2009) where there is less hierarchical structure and its knowledge flows differently from person to person. Similarly, Elkjaer (2003) emphasised that knowledge does not necessarily flow between entities but should be seen as 'a social process of engagement'. Plaskoff (2003) also noted that knowledge is not physically passed on but is "socially constructed through collaborative efforts with common objectives or by dialectically opposing different perspectives in dialogic interaction" (p.163). Likewise, Andersson et al. (2015) argued that the actual knowledge flows in a MNC happen at an employee level, not at an aggregate level such as a subsidiary. Noorderhaven & Harzing (2009) therefore conclude that, similarly to what Zeng et al. (2018) adapted, these knowledge flows will be possible only with collaborating individuals.

If there are possible differences found in employees regarding knowledge flows and knowledge flows can only happen through individuals working together, there is an argument to be made for once more changing the viewpoint. Thus, given the importance of employees in the knowledge management process and a difference, a 'micro foundation viewpoint' is warranted (Abell et al., 2008) and adopted in this thesis. In this micro foundation approach, lower-level constructs are used to explain higher-level organisational challenges such as knowledge sharing.

This micro foundation approach will be important and therefore adapted in this thesis as well. To research how the adoption of agile project management impacts employee knowledge sharing, it is most suitable to approach this from an employee viewpoint as well. Furthermore, employees play a significant role in the process of sharing knowledge in a company. Before discussing what role they play, it is important to consider how knowledge can have different characteristics.

2.1.1 Characteristics of knowledge

The fact that knowledge can differ between occasions is not new. Nonaka (1994) found two major dimensions of knowledge, explicit and tacit, that has since been accepted and studied further (Montazemi et al., 2012). Explicit knowledge depicts knowledge that can be communicated, codified, and articulated in either symbolic or natural language. Moreover, explicit knowledge is easily codified and transferred among different entities through for example information and communication technologies such as enterprise systems (Hansen et al., 1999). Tacit knowledge on the other hand consists of two elements: a cognitive and technical one (Nonaka, 1994). The cognitive element highlights individual's beliefs, viewpoints, and paradigms. The technical element covers the concrete skills, know-how and crafts that apply to a specific context. Gaur et al. (2019) further elaborate that tacit knowledge is embedded in organisational processes in individuals, making it "difficult to transfer without active human involvement" (p.10). Tacit knowledge is used to coordinate and combine resources in new ways and is developed from experience found in the organisation (Earl, 2001).

This knowledge has been found to be an important source of information and even competitive advantage (Teece et al., 1997). Moreover, since the knowledge and information only come from experience within the company, it is specific to the organisational context making it highly relevant for multinational companies (Earl, 2001). Gupta & Govindarajan (2000) found that the ability to more efficiently and effectively transfer the knowledge that is

firm-specific within the MNC: "leads towards sustainable differentiation and therefore competitive advantages against other player in the market (p.473)". Thus, research often concludes that the tacit knowledge that is firm-specific is the type of knowledge that MNC should seek to share for competitive advantages.

At the same time, this high-context tacit knowledge brings along challenges as well. Early studies such as Galbraith (1990) already stated that unit-to-unit knowledge transfer is more complex than what meets the eye. Dennis & Vessey (2005) state that tacit knowledge shared must be de-contextualised first by a similar approach as Lewin's (1947) classical ideas of unfreezing-transition-refreezing. The information must be de-contextualised, made into a general form and after made to fit the new context. Failing to do so would lead towards the possibility of no longer using the transfer of knowledge and falling back into the pre-change status (Montazemi et al, 2012). However, decontextualisation of information is also easier said than done, especially in an MNC environment (Mukherjee et al., 2019) in which there are multiple factors interacting with each other (such as cultural differences to be found between entities in different countries and regions, language barriers, different values, and different practices).

Explicit and tacit knowledge highlight the prominent characteristics of knowledge which are needed to understand knowledge sharing in general. By elaborating on how the integration mechanisms of knowledge sharing are seen, the impact of the change process on it can be measured.

2.1.2 Integration mechanic of knowledge sharing

Thus, there is a need for integrating different mechanisms to facilitate knowledge transfer in an MNC. Zeng et al. (2018) identify three different mechanisms throughout literature: centralisation, formalisation, and socialisation.

Centralisation. Centralisation is concerned with the role of the headquarters of an MNC (Kim et al., 2003). In context of knowledge sharing, centralisation means that the HQ has authority and is seen as a key part of coordinating within the MNC. Kim et al. (2003) describes that key decision making and coordinating is better understood by top management because they have an overview of all the units around the world. Yaprak et al. (2011) add that without centralisation each unit will focus on achieving individual goals and tasks, resulting in a less efficient overall organisation. However, centralisation is an integration mechanism with mixed results. Zeng et al. (2018) for example note that local complexities in subsidiaries of the MNC might be too complex to understand by a HQ and its managers. Moreover, Ciabuschi et al. (2010) found that there might be the possibility that subsidiaries are less autonomous in dealing with their own environment when centralisation is present, and therefore might be less willing to exchange knowledge at all. Noorderhaven & Harzing (2009) also found that due to centralisation less knowledge will be transferred between entities additional to the central knowledge transfer. Centralisation is a complex integration mechanic that can differ in effect due to various other factors. The most prominent one is the type of knowledge that is being transferred: explicit knowledge is found to be facilitated by formal mechanics such as centralisation (Lee et al., 2011). To conclude, centralisation should not be ruled out when considering integration mechanisms.

Formalisation. Formalisation concerns the codifying process and routines and is also referred to as standardisation (Ambos & Schlegelmilch, 2007). In context of knowledge sharing, formalisation can facilitate knowledge transfer by reducing difficulties in communication (Palmié et al., 2016). For example, routines can improve knowledge sharing between different entities by providing more clarity (Ambos & Ambos, 2009). This integration mechanism is

not a new one and is widespread accepted as a means that organisations, even very complex ones, rely on (Ghoshal & Nohria, 1989). However, similar to centralisation, formalisation as an integration mechanism has mixed results as well. Crespo et al. (2014) found that formalisation restricts flexibility and through this knowledge transfer between entities, while Gupta & Govindarajan (2000) found that formalisation increases the amount and effectiveness of communication channels and therefore facilitates knowledge transfer. For formalisation, similar to centralisation, the type of knowledge plays a role as well. Lee et al. (2011) found that explicit knowledge is often effectively transferred through formalisation. Tacit knowledge on the other hand, is more difficult to transfer via formalisation mechanics (Crespo et al., 2014). Similar conclusions for formalisation can be made as for centralisation: it is a complex integration mechanic that depends on several other factors.

Socialisation. Socialisation concerns the role of interpersonal relationships among different units in the MNC (Gupta & Govindarajan, 2000). In context of knowledge sharing, socialisation can help knowledge sharing through developing trust, cooperation, familiarity, and personal affinity (Gupta & Govindarajan, 2000). These factors generate a cohesiveness among entities that increase the willingness to share knowledge (Grøgaard & Colman, 2016). Moreover, socialisation creates interpersonal networks, increasing open communication and most importantly communication channels itself (Gupta & Govindarajan, 2000). Palmié et al. (2016) also found that these social networks and social relations increase opportunities to access knowledge throughout that network. Zander & Zander (2010) researched the role of socialisation as a creator of new knowledge by combining existing knowledge and found a positive relationship there. Thus, there are various ways whereby socialisation can stimulate knowledge sharing. However, socialisation is not an all-in-one solution for integration mechanics either. Tsai (2002) for example found that socialisation mechanics provide better incentives for sharing information without HQ involvement, so without centralisation mechanics. The type of knowledge and especially the facilitating role of socialisation for sharing tacit knowledge (Dhanaraj et al., 2004) is highlighted throughout socialisation literature. The role of sharing explicit knowledge however, less so.

Zeng et al. (2018) concluded that only formalisation and socialisation positively facilitate knowledge sharing. When we consider the previously mentioned approach that de-contextualisation is necessary for (tacit) knowledge to be shared (Dennis & Vessey, 2005), it makes sense that formalisation and socialisation facilitate knowledge sharing. Formalisation, as stated before, help reduce difficulties in communicating the knowledge which is one of the aspects of tacit knowledge. In similar fashion, socialisation does not allow room for knowledge to be difficult to communicate to be effective. Thus, formalisation and socialisation are likely good de-contextualisers making them efficient integration mechanisms for sharing knowledge.

Especially socialisation has a stronger positive impact than formalisation and centralisation is seen on relatively few occasions (Zeng et al., 2018). In the meanwhile, socialisation can also substitute for formal integration mechanisms (Zeng et al., 2018). Efficient and frequent communication between employees can reduce the need for formalised structures. However, using formal integration mechanics (i.e., centralisation and formalisation) next to 'informal' ones (i.e., socialisation) can still be seen as beneficial for e.g., clarity and structure in knowledge sharing (Ambos & Ambos, 2009) and remain a frequently used tool due to its 'actionable' nature (Keupp et al., 2011). This leaves the notion that knowledge sharing in MNCs is a multi-approach of both formal and informal mechanics and each should be considered if they add value.

Moreover, the micro-foundation approach ties in well with these mechanisms. Simply put, the integration mechanisms of knowledge sharing are done through employees itself. Especially the mechanism of socialisation is a physical process between employees. The impact of each mechanism is therefore also logical to be measured through the people that use them, the employees. However, it is unlikely to think that knowledge sharing is similar for all employees. There are inhibitors and enablers of knowledge sharing that cause differences between employees to occur. When these inhibitors and enablers are considered, context is provided about the micro-foundation that is studied.

2.1.3. Inhibitors and enablers of employees sharing knowledge in MNCs

Gaur et al. (2019) define three of these inhibitors/enablers that influence the people that share knowledge: country, firm, and individual factors.

Country level factors. Country level factors refer to national differences that can play a role in knowledge sharing. Gaur & Lu (2007) sub-categorises institutional conditions such as intellectual property protection and bureaucratic bottlenecks. Additionally, there are cultural factors that affect the effectiveness of knowledge sharing (Minbaeva et al., 2018). Aichhorn & Puck (2017) concluded that differences in language can lead to challenges among employees and Peltokorpi & Yamao (2017) identified that these differences can indeed hinder knowledge flows in MNCs. Similarly, spatial geographic distance research found that teams that are closer in distance to each other, or even collocated, are easier to establish formal and informal communication channels with (Beugelsdijk & Mudambi, 2014).

Firm-level factors. Firm-level factors relate to the role the HQ plays in relationship with its subsidiaries. As highlighted in the formal mechanisms of knowledge transfer, HQs can play a major role in centralising and formalising knowledge sharing. This differs per country and company objectives and should be carefully strategized. Firm-level factors include behaviour controls such as direct supervision of subsidiaries and social controls, for example placing employees from the HQ country of origin in higher up positions in subsidiaries. Firm-level factors provide great control which can lead to consistency and centralisation, making knowledge transfer easier (Gaur et al., 2019). This ties in close to the theory on formal integration mechanisms centralisation and formalisation.

Individual-level factors. Individual-level factors are relatively understudied since the employees' perspective (micro-foundation) of studying knowledge sharing itself is uncommon. However, there are some individual-level characteristics that influence the efficiency of knowledge sharing. Some examples of these characteristics are language and cultural familiarity, ability, and willingness to engage in knowledge transfer, career considerations and general attitudes and behaviours (Gaur et al., 2019). To put these characteristics into context, Nuruzzaman et al. (2019) found that managers that are experienced regarding working in a MNC and the concerned industry can significantly facilitate knowledge sharing. The individual characteristics of career considerations/experience, attitude and behaviour influence their ability to share knowledge.

Furthermore, there are difficulties in studying individual-level influences in a topic that is inherently concerned with loads of people and entities. Gaur et al. (2019) provides a great example regarding the difficulties of language. An individual is nested inside an organisation, which is nested inside one of many countries. While a language could be considered country-level issues, it starts out with the familiarity and proficiency of employees. A MNC might adopt one language for all its subsidiaries. Thus, the organisational level is concerned in this issue as well. This showcases how a challenge such as language may be influenced by multiple level factors.

To summarise, to study knowledge sharing during a change process it is most suitable to do this from an employee viewpoint. The importance of the employees (and differences between them) in these integration mechanisms and enablers of knowledge sharing tie in well with the micro-foundation viewpoint.

Since it is clear what knowledge is, how it manifests itself and how employees can differ, it leaves the question what kind of influence the nature of the change process can have. Not all change processes are the same and agile project management might accelerate or decelerate the knowledge sharing process.

2.2 Change processes and employees' knowledge sharing

As introduced before, MNCs face the challenge of becoming increasingly more efficient. One organisational change approach that emerged to respond to this challenge is the usage of agile project management (Annosi et al., 2020). Central to agile are elements such as decentralised decision making, self-organisation, flat and little hierarchy and coordination mechanisms that are self-integrating by nature (Annosi et al., 2020). Leadership is distributed and through feedback networks becomes an interaction between autonomous agents.

According to Conboy (2009) it makes sense that the challenges of competition between MNCs are faced with an agile project management approach. In search of a definition of agility, Conboy (2009) performs a structured literature review and concludes on two major aspects of agility in IT: flexibility and leanness. Flexibility is defined as "the ability [...] to create change, or proactively, reactively, or inherently embrace change in a timely manner, through its internal components and relationships with its environment" (p.336). Especially the focus on relationships with its environment highlights that agility is not only about practices, processes, values, and goals of the project team but also how they facilitate and impact external entities (Conboy, 2009). In an MNC environment, these 'external entities' can be seen as other departments internationally.

Leanness, the second part of agility, is defined as "contribution to perceived customer value through economy, quality and simplicity" (p.339), focusing on the definition of value and that it should be measured from a customer's viewpoint (Conboy, 2009). Agility could therefore well be used to face the challenge of MNC competition. Furthermore, Conboy (2009) combines these two elements of flexibility and leanness to come to a final definition of agility: "the continual readiness [...] to create change rapidly or inherently, proactively, or reactively embrace change, and learn from change while contributing to perceived customer value (economy, quality, simplicity), through its collective components and relationships with its environment" (p.340). An element of 'learning from change' is added, which according to Conboy (2009) is emphasized heavily throughout agility literature.

Since knowledge plays an important role in agility and agile ways of working, agile has various methods that facilitate knowledge sharing by itself. Daily stand-up meetings and pair collaboration for example allow for knowledge to be shared between team members. Similarly, retrospectives support continuous learning at a project team level (Chau et al., 2003). Guilds aims to increase potential for better decision making, helping others, and sharing knowledge (Smite et al., 2019). Guilds are open to any employee and represent people from different parts of the organization. They can vary in design a lot, differing in size, mission, and membership. According to Smite et al. (2019), guilds do not automatically lead to successful knowledge as for example defining and communicating the purpose and expected value is a big challenge. Moreover, finding time for engaging in the guild is a struggle and the lack of dedicated time by companies hinder benefits (Smite et al., 2019).

However, factors such as a good topic, a passionate leader and a proper agenda stimulate guilds towards successfully contributing to e.g. knowledge sharing between employees.

In general, Chau et al. (2003) describe that these methods of knowledge sharing built into agile are there for practical reasons. A major example is that agile has a very small focus on writing documentation on everyday work, and when there is any documentation that it often 'just enough' to get by. Chau et al. (2003) further explains that often the cost of creating and updating documentation is not worth it due to the volatile nature and frequent changes of projects. Thus, documentation can be replaced through frequent and better communications between team members and the customer. Through these methods, employees have means towards knowledge sharing without documentation.

To summarise, agile methods and its focus on people, communication and customer collaboration naturally facilitates and accelerates knowledge sharing. A major sidenote that must be made is that these are theoretical methods of knowledge sharing. The application and use of these methods are subject to the way how the model is implemented. In practice, the agile model might not see these types of knowledge sharing and there should be critical evaluation of correct use of the theoretical methods. Thus, changing towards agile does not offer any guarantees and is often found to be challenging in practice (Annosi et al., 2020).

2.3 Employee change resources during change processes

While the importance of employees and the benefit of a change process agile regarding knowledge sharing has been brought to attention, the relation between employees and a change process has not been elaborated on. Employees are on both the change-receiving as change-initiation side. Change motivates recipients to make sense of what is going on in this new change by creating meaning through gathered information (George & Jones, 2001).

Much of the academic research on organisational change focuses on how organisations prepare, implement, and react to change (Oreg et al., 2011). However, as Judge et al. (1999) noticed, this approach fully neglects change recipients. Employees as change recipients have been seen as an element of resistance in the change process (Kotter & Schlesinger, 1979; Dent & Goldberg, 1999). The consensus that successfully dealing with change lies within the experiences of change recipients (micro level) has been agreed on by researchers after (e.g., George & Jones (2001); Bartunek et al., 2006; Sonenshein & Dholakia, 2012), and has become its separate line of research. Bovey & Hede (2001) researched that change in organisations will only succeed when it is supported and implemented by the change-recipients. Moreover, Bartunek et al. (2006) state that there is no evidence to assume change agents (managers, organisations) and change recipients (employees) always share the same understanding of change. Similarly, Zeng et al. (2018) stated that HQs and subsidiary managers have different perceptions of activities related towards integration mechanics used in knowledge transfer. Thus, especially in change processes, a micro-foundation approach seems accurate and prevents oversimplification of understanding by employees.

2.3.1 Employees' change resources

The actual process of change is challenging for employees as well: employees cannot adjust to change without any help or guidance. One way of studying the process of adapting to change is by looking at 'Conservation of Resources Theory' (Hobfoll et al., 2018). The study of Hobfoll et al. (2018) study shows that contextual and psychological resourcefulness is an indicator of employee's adaptability towards change. Savickas & Porfeli (2012) define employee adaptability as the quality of being able to change, the ability to self-manage transition and to deal with corresponding stress that might occur. These resources form the foundation that leads to 'employee adaptability'.

The theory of Hobfoll et al. (2018) posits that people are intrinsically motivated to obtain these resources. Change information is a resource that refers to both the level and the adequacy of change-related information. Change in any form motivates the change recipients, who have little to no knowledge about the change, make sense of what is going on. They do this by gathering information and processing it towards a meaning (George & Jones, 2001). Thus, in case of organisational change, employees that have more personal resources will likely be more capable to deal with change compared to their less resourceful colleagues.

Employees receive information through their supervisors and their associated communication channels. Next to this, employees may interact with others in their work unit to exchange information (Gong et al., 2012). However, Gong et al. (2012) state that all these different employees may have different information, perspectives, and knowledge regarding the situation. This leads to information variety, especially when for example proactive employees seek out to exchange information with people outside their work unit (Grant & Ashford, 2008). Employees might have different levels of knowledge (sharing) during change, leading to differences between them.

Information, and providing it to employees, is therefore crucial (Jimmieson et al., 2004). Oreg et al. (2006) additionally found that change information is positively related towards less resistance to change, building on the ideas of Wanberg & Banas (2000) that change information is predictive of higher openness to change and therefore acceptance to change. Providing uniform/consistent information, and therefore knowledge, leads to less discrepancies as well. Next to that change information also has been found to be positively related towards other beneficial outcomes such as job satisfaction and client engagement (Jimmieson et al., (2004). When employee' change acceptance differs (Oreg et al., 2008) and providing information leads towards acceptance to change (Wanberg & Banas, 2000), it becomes clear that different employees can have different levels or adequacy of information.

However, this assumes there is contextual change information available. If change information resources are not available for employees, they tend to use personal resources instead. Hobfoll et al. (2018) conceptualise meaning making as a ’personal resource’. Van den Heuvel et al. (2013) define meaning-making as the extent to which individuals are effective in putting challenging change events into a framework of personal meaning. It helps measure if employees can maintain a sense of meaningfulness and purpose during times of change. Meaning making has been studied as a facilitator for change (Sonenshein & Dholakia, 2012, Van den Heuvel et al., 2013). Mäkikangas et al. (2019) found that using personal resources, such as meaning making, do 'facilitate more positive attitudes and proactive behaviour towards organisational change among employees' (p.210). This acceptance towards change was seen in the availability of change information as well. Thus, similar to how change information can be translated into knowledge, meaning making as a personal resource can be used as a replacement for the lack of change information.

Moreover, Sonenshein & Dholakia (2012) studied and found a relationship between information sharing and meaning making. Employees digest information that is provided by their environment, including what is communicated to them. After, employees may get triggered to reflect on this information and therefore indulge in meaning making. In turn, as Van den Heuvel et al. (2013) already found, meaning making predicted acceptance towards change. So, information sharing does not only directly result into a knowledge resource, but also indirectly by triggering meaning-making.

There is both a positive, direct relation to a knowledge source as a positive indirect one through meaning making. Moreover, it provides insights into how employees gain knowledge

as a change resource through information provision (or lack thereof). From the moment meaning making is done, differences between employees in knowledge about the change exist. These differences in change resources might translate into different outcomes regarding knowledge sharing.

2.3.2 Practical challenges of knowledge sharing during a change process

There are also other practical challenges that come with change processes. These processes are in its nature a difficult phenomenon that can be very demanding due to its uncertain, dynamic, and recent nature. Kezar and Eckel (2002) found that unclarities in flows of knowledge may be a reason why change initiatives fail to reach their intended results.

The nature and the speed of knowledge changing can be important on deciding on how to deal with the knowledge (Dennis & Vessey, 2005). Especially when knowledge degrades sharply and is discontinuous, knowledge can cause inconvenience (Dennis & Vesey, 2005). Moreover, it makes sense that an employee might withhold from sharing knowledge if he or she knows that it is no longer correct or soon to be incorrect. Practical examples showcase that change is not necessarily always successful, and some believe that only one of three planned organisational change interventions succeed (Jarrel, 2017). Employees can experience a wide variety of difficulties during a change process or even fear change because of fear of losing their jobs, resources, freedom, rewards, or sense of usefulness. Moreover, they might fear the unknown, a work overload, or the way how change is timed and managed. Employees might as well be inherently conservative or resistant towards change. It is therefore no wonder that knowledge sharing, similar to organisational change, can be seen as a considerable source of stress for employees (Dahl, 2011).

There are differences in the available knowledge for employees and their mechanisms of dealing with this availability, leading to possible differences in knowledge sharing during change. Moreover, the demanding change process also brings along practical challenges. Summarised, this leaves a considerable number of elements on which knowledge sharing during a change process might differ from current research findings on knowledge sharing in 'normal times'. The nature of a change process can cause significant differences. Thus, this research sets out to see how the adoption of agile project management as a change process impact employee knowledge sharing.

3. Methodology

3.1 Research design

The research done on knowledge sharing in MNCs is not necessarily limited or few. Many of the factors influencing knowledge sharing have been studied using mixed methods. However, as Zeng et al. (2018) called for, it is important to see if these concepts exist under different circumstances such as a change environment as this research is focused on. Research on knowledge sharing is quite mature and significant literature regarding agile project management is present as well. The combination of these topics of how a change process towards agile can impact knowledge sharing is, as discussed before, rather unexplored. As Edmondson & McManus (2007) conclude, novel phenomena are likely studied best through exploratory qualitative research. Qualitative research is driven by a desire to explain events through existing or emerging concepts (Yin, 2011), fitting this research well. Moreover, while knowledge sharing on its own is a multi-factor phenomenon, focusing on employees adds additional layers of complexity. To gain insights in this complex and nested topic, quantitative research on knowledge sharing during change does not reflect employees their work, views, and perspectives on the matter. Capturing employee's perspective on knowledge sharing is of such importance that numerical data does not fully fit the research yet. The ideas and events emerging from qualitative research can represent the meanings given to knowledge sharing by the people who live them without the meaning, preconceptions and values held by the researcher (Yin, 2011). To combat findings that are very vulnerable to context-specific results, the thesis discusses the challenge of generalising findings throughout.

3.2 Research context

The case company of this research is a subsidiary of an MNC in the Netherlands at the IT department. With around 2100 employee total in the Netherlands, the company works in various sectors including but not limited to defence, (cyber)security and transportation. They are part of a large multinational group that have subsidiaries in over 68 countries totalling around 80000 employees.

The IT department studied is responsible for maintaining and developing IT systems to support other departments and people at that location. This means executing IT projects, upkeep, and service support. In January 2020, the team consisted of 85 IT professionals and growing. Cross-border collaboration exist between different IT departments worldwide, when for example a bug cannot be fixed locally.

Working together internally (prior to the change process) was done via various forms of project management. The IT department studied mainly used Scrum (framework to develop, deliver and sustain complex problems adaptively), Kanban (workflow management method with a lot of visualisations) and 2- or 4-week sprints. Daily stand-ups were being held with a scrum master sprint planning sessions were being held and at the end there was time allocated for a retro where the team reflects on performance and experiences gained.

This way of working together came from a bottom-down development inside the IT department itself. Each 'sub team' in the department was free to choose what form fits themselves best and enjoyed autonomy and self-ownership over their project. For around five years they have been working this way and most of the employees were happy with this system: a certain degree of proudness exists in the department about their bottom-up progressiveness (internal research, 2020).

However, the IT department is well on its way towards implementing agile project management. With pressure coming from the headquarters of the group, this model is to be

introduced in all IT departments worldwide. The practical aspects of the model are based on agile project management: the model is a variation on the well-known Spotify-model The main differentiator is the fact that agile model implemented will not entail guilds.

The agile model is not only introduced to face the challenges the local IT department is facing, but also the challenges of other IT departments combined. The idea originated at group's headquarters in France Country Business Units (CBUs) wanted to work and collaborate with other CBUs, but their current 'silo' model of having different groups divided by nationality did not support this. A mutual way of working was needed as this could help tackle this challenge and improve the learning process in the meanwhile. Another reason to implement agile project management is the continuous need for innovation and improvement. There is a strong need for transforming to a modern, digital ways of collaborating: alignment between entities is needed to efficiently achieve results.

Due to the top-down nature of change, change recipients are unfamiliar with agile and how it practically differs from using scrum. Other natural concerns are whether they have a place in the new system (employees got new roles without re-application necessary) and if they will actually enjoy and get fulfilment out of their new position. The practical challenges mentioned and the overall satisfaction of the former 'scrum model' may lead to a rough starting point. In former internal research it was concluded that the employees were quite satisfied with their previous ways of working, and a certain degree of proudness exists in the department about their bottom-up progressiveness.

The current goal and timeline is to have agile fully implemented at the department in 2021. While the department has had some time to work with agile project management as of now, it is still in its early stages with the corresponding challenges that come along.

3.3 Sampling procedure

The sample of the total population is very representative for this study as all the employees in the IT department studied are subject to a change process towards agile project management. While the micro foundation viewpoint considers everyone as an employee, different groups can always be found and are especially visible from practical viewpoints. Some groups are naturally formed agile environments, such as squads and tribes. While the study recognises that these groups are different and might see different levels of employee knowledge sharing, it does not set out to categorise these groups or highlight differences between them. Thus, the study treats all employees equally as employees who are subject to a change process towards agile project management.

To further define a useful sample to correctly reflect the entire department, initial meetings were held with the corresponding agile coach. In these meetings the goal of the research was discussed, and a discussion on suitable sample of the IT department was discussed. These participants are selected to be a representative sample of the department, which means in this case that the participants will be selected to properly reflect the structure of the subsidiary. Moreover, it tries to be reflective of the entire subsidiary by age, gender, and tenure. This allows for a complete and broad interpretation of the information and events. Through anonymity the interviewees are encouraged to freely speak about the topic without any direct judgement or accountability. The sample consist out of employees who are in theory, from the perspective of their role, concerned with the outcomes of the change process. This includes Product Owners, Scrum Masters and Chapter leads. The thesis does therefore not include a lot of operational employees, as the researcher concluded in early stages that the 'strategical' topic of knowledge sharing is of no concern for e.g., an employee who is concerned with handing out hardware to employees. Therefore, to gain insights on the topic of knowledge and

knowledge sharing, the thesis aims to interview employees who are concerned with more strategical topics such as knowledge (sharing). While these employees have a clearly defined role in the agile system, all of them spent time on the operational side either directly or indirectly through frequent communication with other employees and squad members. It is therefore expected that throughout the interviews, the product owners/scrum masters/chapter leads can communicate insights from operational employees as well as their roles are connected.

An instance of 15 IT employees were interviewed which translates to around 12.5% of the entire IT department. The sample had about a 50/50 division of gender, represented ages between 25 and 55 and a tenure reaching between 4 months to over 10 years. The researcher decided on not enlarging the initial instance on grounds of saturation (Yin, 2011). The information gained through the last interviews was repetitive and did rarely provide any new or unique insights, paving the way to start for discussion of the insights.

3.4 Data collection

The main means of data collection in this thesis is through interviews. These interviews are open-ended meaning that these interviews are conversation driven to gain in-depth insights into the topic (Yin, 2011). Structured interviews with scripted interaction would lead towards almost a form of survey or poll, which is not the intention. However, using fully open and unstructured interviews might not lead towards relevant or accurate insights. Therefore, using an open, semi-structured approach with an interview guide seems to be an adequate middle way (Yin, 2011). Additionally, they allow for easier data comparison of the 1st order concepts and, at the same time, will give the researcher the freedom to adopt and tailor the interview according to the participants' answers.

Doing open, semi-structured interviews has the additional bereft that the participants also have a way of asking or challenging the topics discussed in a two-way conversation. Open, semi-structured interviews leave room for participants to correct any flaws, misconceptions or misunderstandings of knowledge sharing in the case company (Yin, 2011). This way, the flaws of researching elements of knowledge sharing in MNCs beforehand can be corrected if for example certain elements appear to be missing. To put this in other words, this type of interviewing enables the discovery and studying of other elements of knowledge sharing in MNCs that might be missing and other unanticipated events can be accounted for (Yin, 2011). This combats selectivity that arise because of the research preconceived elements of knowledge sharing. While the researcher’s intention was to have face-to-face interviews, all the interviews were done through digital means. According to the pertaining COVID-19 regulations and company policy, it was advised as to work from home as much as possible. Furthermore, for practical reasons such as planning with interviewees with very busy agenda's, digital means offered more flexibility instead of physical options.

Additionally, some of the results of the interviews are supplemented by small researchers’ field notes. The goal of these field notes was to enhance data and provide a richer context for analysis (Creswell, 2013). These field notes were made sporadically during a period of four months this thesis was written in. Practically speaking, notes were made during personal communication with agile coaches, scrum masters, product owners and team leads. Additionally, field notes were made during the digital interviews with employees. The field notes were mainly iteratively developed and used to improve the interview guide. Next to that, they were used to further specify and elaborate on the findings and results to prevent novel outcomes of qualitative research to be misinterpreted (Phillippi & Lauderdale, 2017). The report explicitly highlights when these observations are used for this purpose.

In order to set up the interviews, a digital invitation was sent to the sample to inform them about the goal of the interview and what preparations should be made. The topic of discussion, being knowledge and knowledge sharing in an agile setting, was mentioned in this invitation but not in further detail. Included in the invitation was an anonymity claim, information on the handling of data and information on informed consent. The average length of the interviews was 30 minutes and span between 23 and 36 minutes.

In the beginning of the interview, the researcher briefly introduced himself and the topic that was being discussed. Afterwards, some initial questions were asked to get the participants started in a discussion towards knowledge (sharing). Therefore, the researcher did have an interview guide but did not have a script for the interview. The guide consisted of key topics and their relations between them and included some predefined questions. However, questions asked could differ between the participants depending on the context and content of the interview. It could be best compared to a standard conversation that had open-ended questions. The interview guide, in its Dutch source, can be found in Appendix A.

The interviews were held in Dutch as is the language used in the case company. Moreover, the topic at hand could be discussed in plain and everyday terms by the participants during the interviews. This provided ideas and results that are truer to the employee research focus of this study. While the sample consisted of highly skilled employees, the researcher concluded in early phases that most employees were not familiar with academic research or academic literature regarding this topic. The use of everyday language that the open setting of a semi-structured interview provided can benefit comprehension of the topic and sharing of insights (Yin, 2001). Similarly, any findings of interest were more useful in this format for practical implications since these come in everyday (company) language.

The interviews were recorded and automatically transcribed verbatim using Amberscript. This resulted in on average 9 pages of transcription per interview, for a total of 135 pages. Since this software automatically transcribes, the researchers reviewed them for errors with the original audio recording. Afterwards, the quotes from the interview transcripts that will be used in the thesis were translated into English by the researcher. Each interviewee was randomly given a pseudonym when using their quotes in this thesis and the gender of the pseudonym is randomised as well. The original transcript was shared with the corresponding participant to confirm the contents of the transcript and to offer to possibility to revise any meaning that e.g., might be lost in translation. After, the transcription was used a starting point for analysis.

3.6 Data analysis

The interviews and field notes made were coded by hand by the researcher. The research followed a thematic data analysis approach (Braun & Clarke, 2006) in order to answer the research question. In order to achieve this, the Gioia data structuring method was used (Gioia et al., 2013). Here, a 1st-order concepts were created where terms were written down in the language the participants used. The categories were then combined based on similarities and differences and put together. From those concepts, 2nd order themes were created. These were themes that are more theoretical in nature than the 1st order concepts. Last but not least, once these themes were workable, they could be made into aggregate dimensions. A data structure of these concepts, themes and dimensions was made which visually represents how raw data was coded into themes and dimensions. This helps with demonstrating rigor in the qualitative research (Gioia et al., 2013). From that point forward, thematic analysis was done (Braun & Clarke, 2006).

4. Results

In this chapter, the results from the data that was collected through observations and open-ended interviews with 15 employees are showcased. Divided over 4 tables, each table illustrates the structure and ordering of data according to the Gioia et al.'s methodology (2013). Each table includes the 1st order concepts, that are closely aligned to the words from the informants. Each 1st order concept is illustrated with some sample quotations including the number of the respondent. Additional quotes can be found in Appendix B. Following that are the 2nd order themes that are more 'researcher-induced' and the aggregate dimension that follows from these 2nd order themes.

In total, four aggregate dimensions were identified from the data analysis: Sources of knowledge ambiguity; Practical means of knowledge sharing; Total company culture and knowledge sharing context; and Change process influence. Each of these dimensions will be first explained as to what their underlying concepts and themes are, and the reasoning behind the creation of this dimension is explained. The full data structure can be seen in tables 1A, 1B, 1C and 1D.

4.1 Dimension 1: Sources of knowledge ambiguity

Table 1A offers a total overview of the data structure of this dimension.

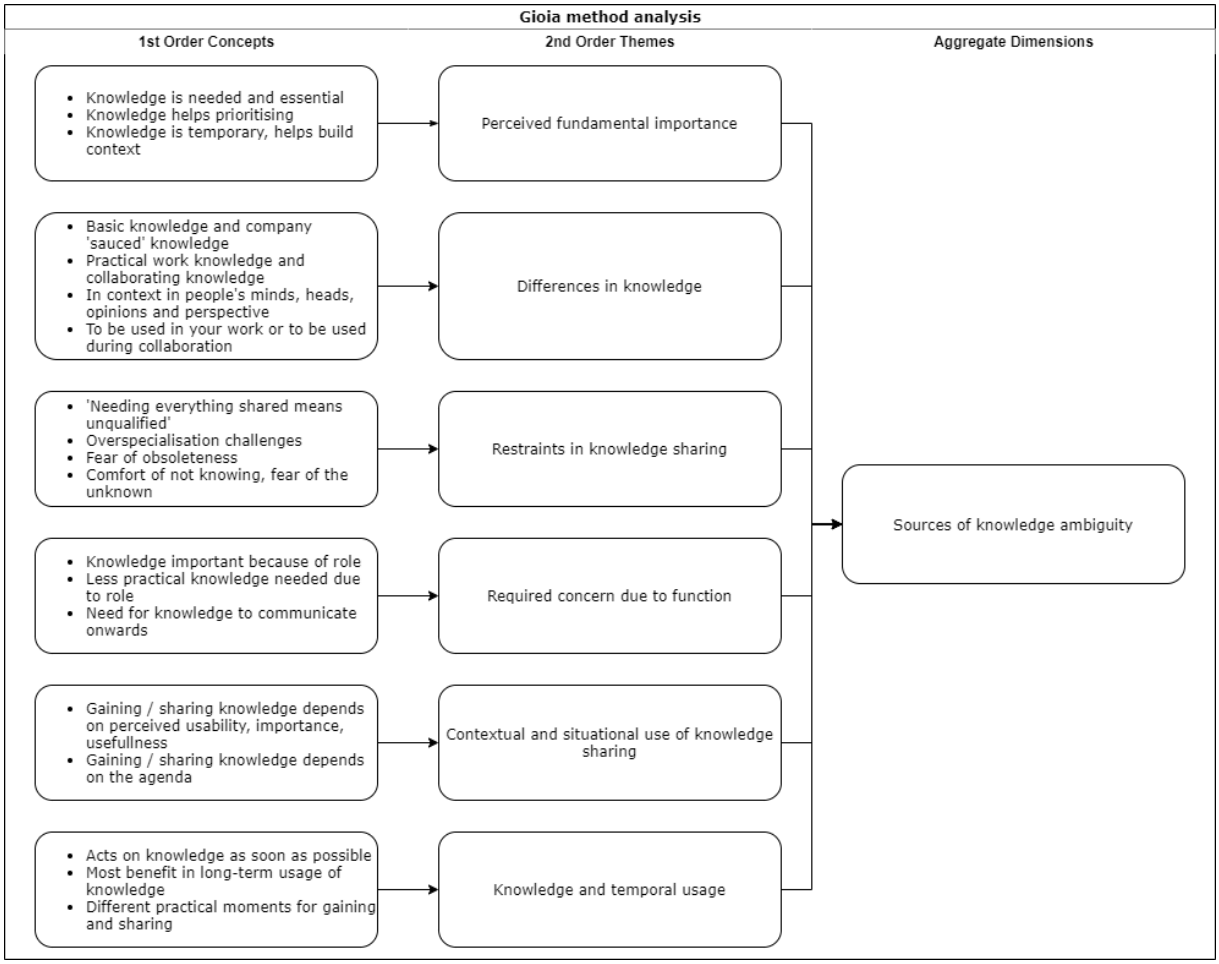

Table 1A: Overview of the data structure for the first aggregate dimension

At the start of the interviewees, every single interviewee went on to define knowledge as a topic to start off. Most interviewees shared that they find knowledge to be very useful, although all interviewees defined it in a different way. One of the many examples is as follows:

"Knowledge is a required resource" (Frits). When asked why it is a required resource, (Frits) elaborated that *"Knowledge is essential for the development of the business and its people"*.

Other interviewees highlighted the importance of knowledge in the context of needing it do their work:
"Knowledge allows you to start quickly; you do not need to reinvent the wheel and know what steps to take" (Rik)

The third kind of direction that defined knowledge were interviewees that highlighted the following:

"*Knowledge is a daily concern, and by doing your job, you build knowledge*. *Sharing of knowledge is therefore needed for when example someone is missing due to for example illness"* (Mick)

While many interviewees set out to define knowledge in general, the consensus described that many find that knowledge to be important topic. It is either required or fundamentally helps them to do their job. Therefore, the theme of "Perceived fundamental importance" was decided upon instead. Without any additional context, the interviewees perceive knowledge sharing as a required resource that is of importance to them.

Following this importance of knowledge, many interviewees went on without a pause to highlight that that there were multiple forms of knowledge. Similar to the definition of knowledge, there was not a single two employees who described these forms of knowledge the same. All interviewees do agree that there are two categories of knowledge:

"There is basic knowledge, and knowledge with a company 'sauce' put over it. Yes, that has to be there in order to do our work, and that is the knowledge you want to share in your team" (Meike)

Six of the interviewees also noted that knowledge was not always factual. Some explained that knowledge can be within people, in their context of their minds and is subject to, for example, interpretation, perspective and opinion. They highlighted that there is not always one truth to knowledge and that more than factual writings are needed to explain how this knowledge works. As a result, it became clear that an overarching theme of ‘differences in knowledge’ itself is present: knowledge can differ among itself.

While every interviewee described that they find the topic of knowledge to be important and useful in general, over half of them also noted that there are some negatives sides towards this topic. Interviewee (Meike) for example stated that she had discussions before on needing all knowledge to be shared no matter what. She elaborated on the fact that she believes that even though documenting is good, and any alterations and oddities should be documented and shared, wonders if someone who needs everything shared and documented "*is the right person to work on it at all*". The interviewee noted that while some might disagree, this is how she regards the issue, highlighting that knowledge sharing can cause friction as well. In similar fashion, five interviewees highlighted the challenge of knowledge and sharing thereof in context of very specialised employees.

"Knowledge sharing has challenges: [...], people are too specialised in their job and need not to share knowledge with others, [...]" (Oscar)

These interviewees stressed the struggle of overspecialisation: some employees work on systems so old, that they are the only ones that know how to work it. When asked to further explain their statements, an explicit reason was rarely given though one interviewee stated that *"People retain their knowledge simply in fear of becoming obsolete, especially when older of age, hindering improvement on these systems"* (Natalie). Highlighting a clear restraint in the topic of knowledge and sharing thereof, another interviewee rather suggested a solution of *"Multiple people should know of legacy systems in order to prevent knowledge loss" (Sjoerd).*

While taking into consideration that the interviewees accented the greatness and fundamental importance of knowledge sharing, the more challenging/negative side of knowledge and knowledge sharing is highlighted. Therefore, the theme restrains in knowledge sharing was made to reflect this side of the topic.

Following this theme, interviewees went on to describe the degree as to what they are concerned with this topic. Two thirds of the interviewees related the degree of concernment with this topic to their organisational function; the remainder of the interviewees simply stated a quantification of how much they are concerned with the topic, without explicit reason as to why. Examples of how people related the topic to their function are:

"The topic concerns me due to my role of scrum master, I need to make sure that my team can collaborate well for which I need knowledge on how to collaborate properly" (Natalie)

Others, who fulfil similar roles such as a scrum master or product owners, surprisingly gave answers that moved away from this notion of being concerned due to their role. For example, interviewee (Meike) (researchers note: scrum master) stated that *"I do not share knowledge that much due to my job; when really needed, someone knows how to do it and I can ask".* Interviewee (Frits) (researchers note: product owner) expressed that "*Gaining [that every day] knowledge is necessary due to the fast-moving pace of my expertise",* also focusing more on the practical aspects of knowledge. While these differences highlight an interesting finding that will be discussed later, the theme of a certain degree of required concern due to function is seen, making this the overarching theme here.

When asked to elaborate on when the interviewee shares or gains knowledge, it became clear that this question could not be easily answered either. After numerous "it depends", several interviewees stated that there are a few very influential factors that decide on when knowledge needs gaining and sharing.

"Gaining and sharing knowledge are highly dependent on what we are doing; I try to make a decision myself what is useful to do" (Fredrika)

"Knowledge sharing depends on the demand for it. Sometimes someone approaches me to ask a question or discuss something, and then I am more than willingly to share" (Katja)

Additionally, many interviewees emphasised that the general timing plays a role as well. As interviewee (Sjoerd) stated, *"Sharing knowledge depends on and fluctuates, there are intensive times and times where you 'just work' for months"*. The agenda (researchers note: where the interviewee is in the project, not related to the calendar itself) is key in deciding how much knowledge sharing happens according to interviewee (Oscar) and (Mick). Interviewee (Frits) also noted that *"When it is very busy, knowledge sharing is the first thing*

that is removed from the agenda". Two interviewees also highlighted that explicitly thinking about when you are sharing knowledge can be challenging as well:

"You are always 'doing' knowledge, but I think that whether you notice or not is different. You always consider some previous knowledge on how to deal with a situation, and I believe that most of the *time you do not even notice"* (Ewoud)

Therefore, the variety in sharing or gaining knowledge that depends on some of the contextual factors were put into the theme of 'contextual factors for use'.

The dimension that follows brings attention to the temporal dimension of knowledge usage. Interviewee (Jonas) indicated that *"I act on knowledge as soon as possible, and if that is too early and I screw up, I learn from it"*, supported by for example interviewee (Hilda) that notes that "*Knowledge sharing and using it happens primarily in a short time span, for example when starting something"*. In contrary fashion, interviewee (Arjan)stated that *"Generally I act on knowledge over a longer period when I gain it"* with interviewee nine noting that "*Knowledge sharing has mostly long-term rewards anyways".* There seem to be various amounts of time that is between gaining or sharing knowledge and acting upon it, differing between individuals. Therefore, the dimension of 'knowledge and temporal use' was created.

When these six 2nd order themes were summarised, what stood out is that knowledge and knowledge sharing is not a uniform construct for everyone. There are differences to be seen between people which shows that knowledge is a topic that has multiple approaches and interpretations. The themes highlight the sources as to how knowledge can differ, leading to the creation of the aggregate dimension of 'Sources of knowledge ambiguity'.

4.2 Dimension two: Sources and means of knowledge sharing

Continuing with the interviews, a topic that repeatedly came up were the several ways whereby knowledge can be shared. This and the total data structure overview can be seen in Table 1B.

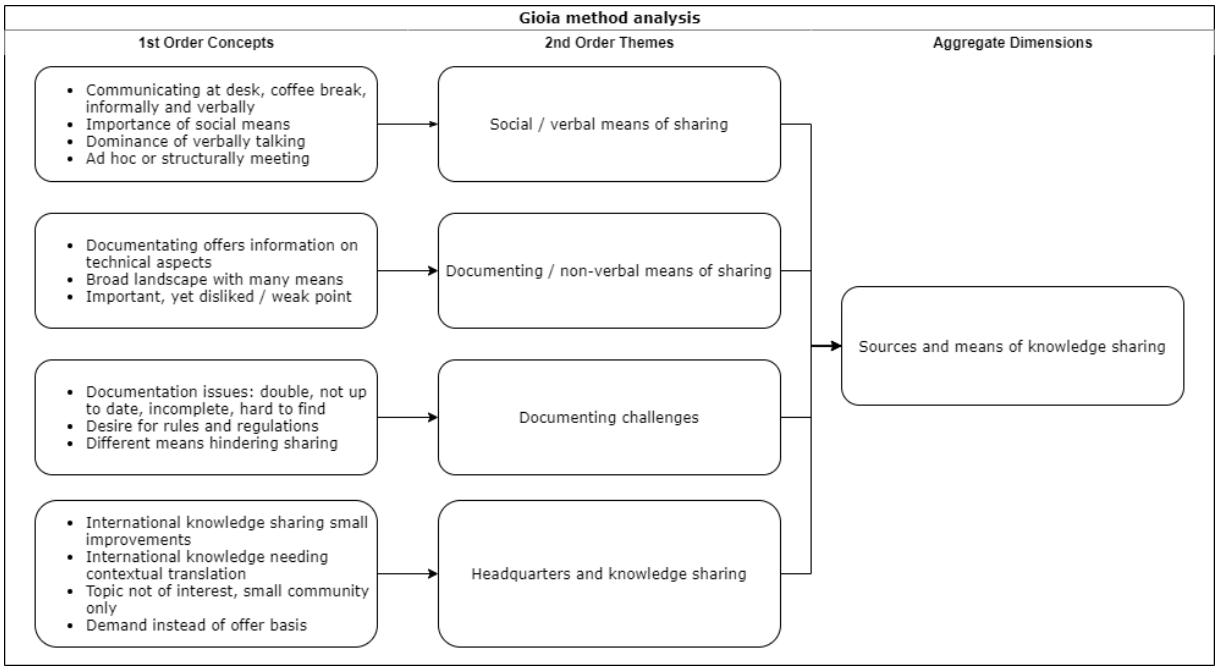

Table 1B: Overview of the data structure for the second aggregate dimension

The first of these means to share knowledge that was mentioned regularly was simply 'verbal means': when talking to each other, knowledge can be shared.

Interviewee (Frits) stated that "*The coffee machine, that is… something very important, a very important means. You get a lot of information there that is unrelated to your own working field, allowing you to pick up a lot about other people and teams in the department, which I therefore value a lot"*. When asked how important this means for them is, almost all the interviewees stated that social and non-verbal means are the most important to them.

"Exactly knowing how things work cannot be simply read in a document. It is a very common process that we, together, share and get ourselves up to date on what we are doing. We also have more informal moments with for example other teams where we accidently discuss some more in-depth topics. […] When you compare things, much of our week is discussing with each other, asking other people things, and searching for answers. It is not just something that people quickly look at who you do, but also offering the opportunity to further help with it. This is the biggest part of our work." (Rik)

In similar fashion, interviewee (Arjan) mentioned that according to him, 90% of all knowledge sharing happens through social, verbal means, describing the dominance in social/verbal means of knowledge sharing. To conclude, verbal means of knowledge sharing is an important theme.

When the interviewees were asked what other means of knowledge sharing existed, there was no doubt that a lot of knowledge was being shared through non-verbal means as well.

"To start, we have a wiki page with a lot of information being shard every week. You have intranet, where knowledge is being shared, you got mailings with the same goal. We have a lot of our information on our wiki page. Oh also, we have a chat function since a couple of months, providing a low-effort means to share and help colleagues quickly" (Julia)

Especially the examples of the wiki and intranet were repeatedly mentioned by the interviewees. The importance of it is clear for many as well, as interviewee two elaborated that *"When we need to do maintenance on systems, documentation is key in order to have this get this done".* What is striking is that even though all interviewees see the benefit and use of non-verbal meaning, multiple people noted something similar to the following:

"*Documenting is a though challenge. It is never something fun to do, some people really do not like it. People feel like we did this, I understand it, if there are questions just come to me"* (Juliana)

Interviewee (Julia) also noted that *"While the wiki causes me to have something take up less of my time, it requires me a lot of time to add to the wiki"*. Nonetheless, documenting, and non-verbal means of sharing knowledge is a common theme.

Once the topic of non-verbal means such as the wiki came up, many interviewees took the opportunity to highlight the downsides and challenges of this means as well. While none of the interviewees explicitly highlighted the challenges that come along with verbal means of knowledge sharing, numerous issues with non-verbal means came up:

"The wiki has double list that sometimes can be either incomplete or out of date. […], we have a lot of forms that are there to be transparent, but I would have no clue on how to easily access them even right now" (Rik)

"I believe that the success of the wiki will mean its own downfall: at a certain point, it is so elaborate and not actual anymore. So, in practice, if I find something that I really use I add it

to my favourites on my browser. When I do not know something, I first go ask someone else if he or she has a link. I am not going to search on whatever piece of software; it is a maze." (Ewoud)

Other interviewees suggested practical solutions to fix this, such as *"There needs to be a guideline: scroll more than three times, you need to split it up or so"* (Julia). Next to these challenges, the very diverse landscape of means to share knowledge through a wiki, forum, intranet, and mailings pose challenges as well. *"I miss out on something. Yes, I believe that due to the enormous broad and varying landscape, where we store knowledge on how to work, an internet page for our country, the group, Microsoft Teams, the wiki and so on. I believe that it does not contribute to having information clear and centralised for people. I wish that we find a solution, together with different parts of the group, to centralise this all"* (Frits). Also the individual preference plays a role: *"There are two different documents for sharing that I should use, and depending on who you ask, you get a different preference. So I decided for myself: I'll do what is easiest for me"* (Arjan). The numerous challenges of non-verbal means and especially documenting lead towards the separate theme of 'Documenting Challenges' to be included.

The interviewees mentioned indicated that these are the ways knowledge is being shared and gained. While sometimes (for example in the challenges of documenting) the other countries in the group were mentioned as to share knowledge better, none of the interviewees naturally indicated any means of source of knowledge sharing between the other countries of the MNC. Arguably many of the interviewees were solely focused on a lot of details that they noticed in their teams only. Therefore, to gain insights in whether this plays any role at all, the researcher deliberately asked about whether MNC countries were any source or means of knowledge sharing at all. Important to note is that during the following answers, none of the interviewees mentioned any other country than France, where the HQ is situated. Thus, when interviewees spoke of other countries, they only meant France.

A note must be included that after deliberately asking about the topic, some interviewees tend to share as much as possible as to what they are doing regarding knowledge sharing and other MNC countries. The researcher noted in his field notes that this is likely due to the fact that people estimate the researcher to be an expert in this topic. Once mentioning a topic that is not discussed upon, interviewees wanted to share the importance or upsides of the topic instead to acknowledge the importance of the topic. For example: *"There are webinars...; Last week, there was a meeting from the department head about the change process"* (Arjan). In general, as a reply many interviewees tended to share the upsides or highlight positive elements as to what is good or going well:

"*More now; this has to do with our change process, that is also happening in other countries. While it was a block box previous year, now due to my role I get and share more knowledge from the group"* (Fredrika)

However, after having some time to talk about this, many interviewees came to the general opinion that this topic is not very everyday at all. As implied by the topic not coming up directly, the interviewees noted the following nuance:

"Yeah, it is just... primarily through mailings or presentation that are shared. What is more is that it is challenging: you get entire mails, presentations and I wonder: this really does not interest me, or I already know. Maybe a part of it is only interesting, but that is probably true for all knowledge, but anyways, most things are nice to know but are of no use" (Sjoerd)

"If there are issues, we can always have a call, and maybe we even do this on a weekly basis. However, France, the group... yes, it is just an entirely different sort of knowledge which you gain. What I see is we get information, but we need to translate it ourselves to apply it. I think, imagine, putting someone from France in our team, then he would not be able to do what he is doing in France. It simply just does not translate 1 on 1" (Rik)

When asked to give a weight or division between the verbal, non-verbal and other MNC countries means of gaining and sharing knowledge, most interviewees underlined that gaining and sharing knowledge through and with these MNCs countries costs very little to no % of their time.

"I would say that 90% is social and 10% through non-verbal means" (Arjan) *"Social is close to 50%, the applications 40% and the group 10%"* (Fredrika)

While this topic of knowledge sharing through the MNC countries only came up after explicitly asking for it, it provides quite some insights that are useful for further analysis. Therefore, a theme of "MNC countries as means" was added as a finding.

To summarise, the four themes highlight the importance of means and sources of knowledge sharing, leading to the creation of 'Sources and means of knowledge sharing' as an aggregate dimension. Apparently, these themes resonated well with the employees in general as they are clearly elaborated on by them. Arguably these highly detailed and relevant insights would not emerge when not using a micro-foundation approach of interviewing employees themselves.

4.3 Dimension three: Company culture and company topic focus

Next to this aggregate dimension, the interviewees elaborated quite extensively on the company culture and focus on this topic as well, as can be seen in the data structure table 1C as well.

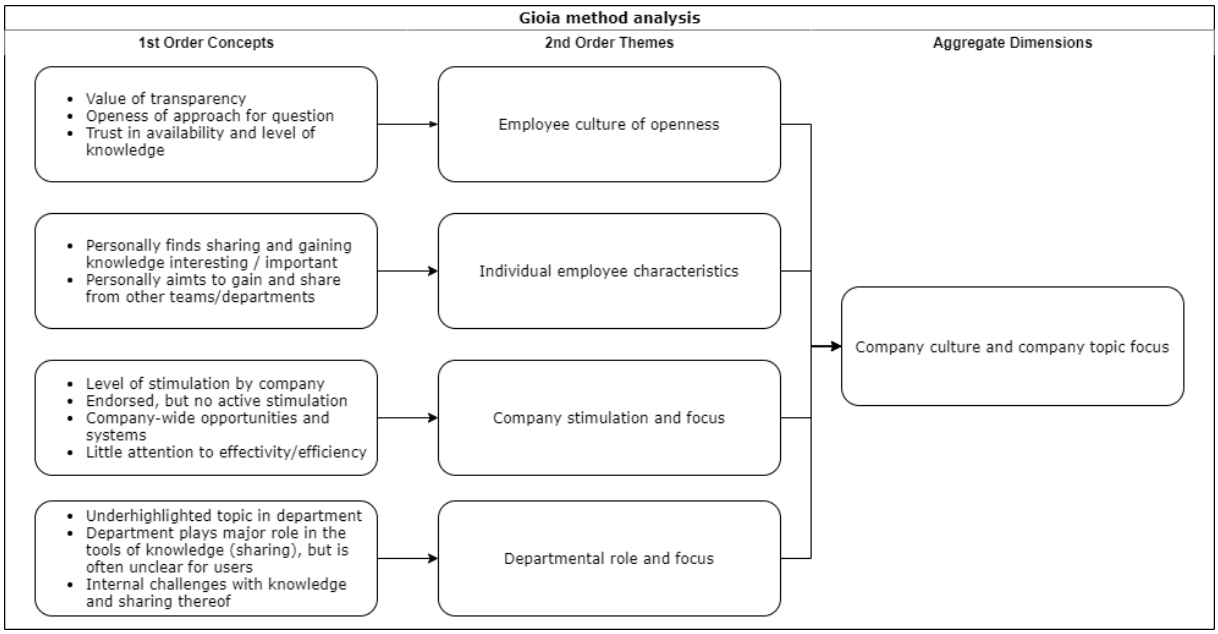

Table 1C: Overview of the data structure for the third aggregate dimension

To start out, interviewees shed light on how the people in the organisation are in context of this topic. Many of them drew attention to the transparency and openness of the employees of the organisation:

"I see similarities in the fact that we are all very transparent. Everyone is open to share information and answer questions. I notice this in many other people as well" (Frits)

Moreover, there is trust that when knowledge is needed, the employees as a total would always have an answer. Interviewee (Oscar) explained that *"When is needed to know something specific for what I was doing, I had to go and find it myself by talking to others. However, every time that this happens, there is someone who knows the answer or can share knowledge with me. So, if I need some knowledge, I will get it".* Thus, in general, an employee culture where transparency and openness are valued exists and there is also confidence in finding knowledge and answers through people. Therefore, the employee culture of openness was added as a theme to describe this aspect.

When asked what role the interviewee-self plays in the topic of knowledge sharing, answers that are positive in nature were given throughout.

"I have my obligations but next to that, I try to add my own contribution. I try to be transparent and share knowledge which I gain as fast as possible. I try to be transparent about conflicting knowledge and try to make that a topic which can be openly discussed. I find this important as this contributes to collaboration and a safe feeling, so that is what I contribute to" (Frits)

Additionally, interviewee (Sjoerd) stated that *"I do not have to work operational tools and applications, so I motivate others to share the knowledge between them. I make sure there is an environment and possibility to share knowledge and help prioritise with them"* (Sjoerd). The interviewee takes up a role that facilitates in the sharing of knowledge, even though he or she does not directly need that particular knowledge. Similarly, a couple of interviewees highlighted that they try to facilitate knowledge and sharing thereof, but more cross-teams than intra-team:

"When I look at myself compared to others, I try to gain knowledge from other sources as well. And I am always learning from those moments: people have entirely different approaches than we have! I try to gain from different sides and reel that in" (Jonas)

"I am the lubricant between different teams and team members regarding knowledge sharing; when there are issues or hurdles, I try to help fix them" (Juliana)

Since these individual levels characteristics explain how the individual self prioritises or finds the topic important trying to help others with it as well, they are therefore given their own theme.

When asked to reflect on whether the company (therefore not the entire group) supports the topic of knowledge sharing or actively puts it on the agenda, mixed results were reported. Some interviewees took the opportunity to elaborate on all the improvements that can be done, also on a departmental level, which will be discussed after. The others thus gave mixed answers:

"Difficult to answer... I have the feeling if is something important, you get room and time for it. And this is expressed as well. The problem that comes with this is that people do not take the space and time for it. [...] There is a difference between endorsing and actively stimulating through communication for example. " (Katja)

Interviewees described practical opportunities that the company provided concerning knowledge sharing:

"Gaining knowledge is really stimulated, they stimulate to do a training or course to gain knowledge, but also on how to document better. This resulted in an initiative, that thus originates from within our company, to make sure we document all our important systems on the wiki" (Meike)

To summarise, the interviewees accented company stimulation and focus on the topic of knowledge, leading to this 2nd order theme to be revealed.

The interviewees were asked to re-answer the question but with a focus on the department instead of the company as an entirety. The idea behind this was to see if in such a large MNC, differences exist between a department and the total company. Thus, the interviewees set out to elaborate on whether the department supports the topic or actively puts in on the agenda. The following was said:

"*Knowledge and knowledge sharing is not a topic that I hear about every day. I cannot actively recall the last time it was actively discussed in the department"* (Julia)

"I see differences in the department due to differences between the people itself. There are individual preferences for the topic, and sharing knowledge differs due to the need of knowledge for individuals as well. Thus, the departmental role depends on the individuals" (Hilda)

The topic of knowledge sharing concerning the department also had an additional meaning for many. Interviewees indicated that they feel like the IT department plays a role in the topic for other departments as well, through for example tools for knowledge sharing:

"We are key in facilitating means to share and store knowledge. If we do not have this role, it becomes even more messy. We have some improvements to make however: making this more well known. Tell people that this is the landscape; this is what it is and what you can do with it. Improving to make it really obvious what you can do with the tools we have and what you can do with it, and making it clear that we can and will support you with this" (Fredrika)

Additionally, interviewees were keen on suggesting improvements that the department can make regarding knowledge sharing. Some of the issues that were discussed on a department level are:

"Knowledge can sometimes mean power. Sometimes, people share knowledge but not all of it. Later, you notice that since you realise that things did not go well, or if people really do not want to share you will notice. As a department, we cannot be dependent on solely one person to have all that knowledge, which we can improve upon" (Juliana)

"With young people, knowledge is inside the group. With older people, it is more in the individual. There is a group of older people that want to retain and protect their knowledge, with the intention (if you ask me) to be sure they are still relevant" (Sjoerd)

The role of the department in this topic and the challenges that reside inside showcased that there are differences to be seen between it and the company as a whole. Therefore, the 'departmental role and focus' theme was created. From this part of the data analysis, four themes emerge that are closely related to the company culture and topic focus. The general 'employee culture of openness', the 'individual employee characteristics', the 'company stimulation and focus' and the 'departmental role and focus' highlight a context that is highly specific for this particular company. These themes indicate the challenges and level of concern of this company and therefore together serve as our third aggregate dimension.

4.4 Dimension four: Change process influence

The last topics and contents of the open-ended interviews were focused on the change process towards agile project management the company is going through. The interviewees shared insights on a lot of different topics, resulting in four additional 2nd order themes to be created, see table 1D. They are discussed further here.

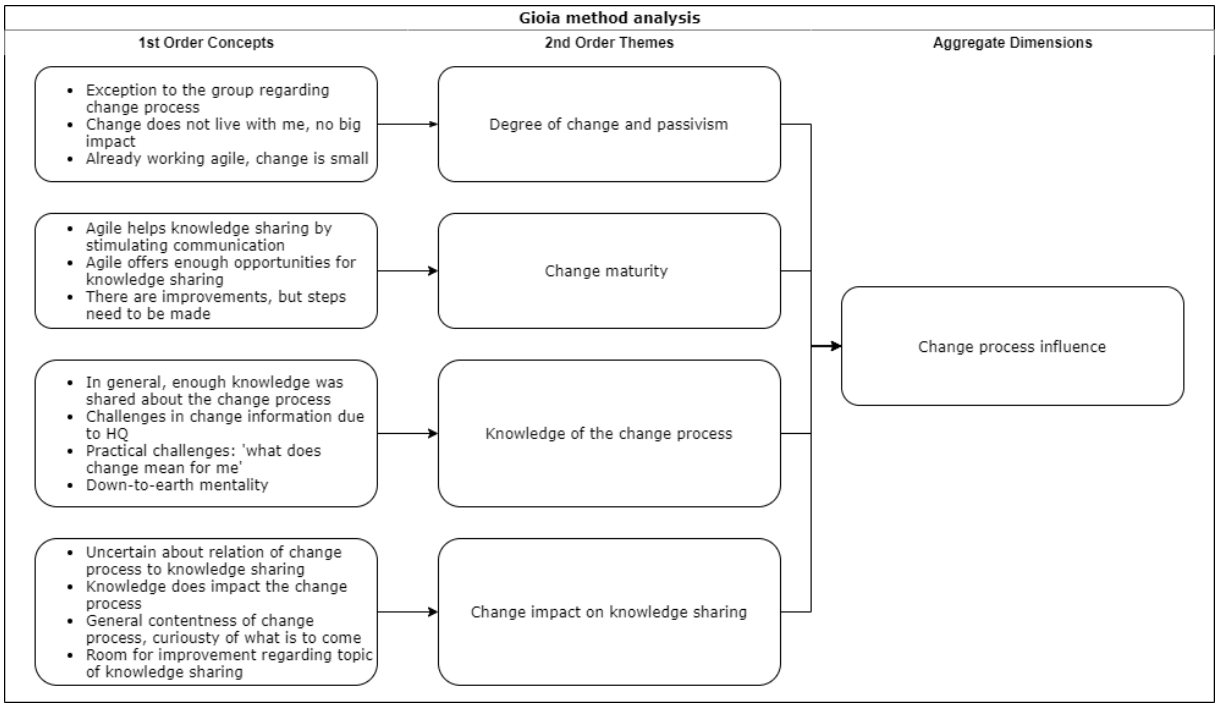

Table 1D: Overview of the data structure for the fourth aggregate dimension

To start, interviewees made some general remarks about the change process and in general the mild character of it. Interviewees were quick to note that even though a change process did occur or was still in process of being done, the real changes that are observable for them are not as large in nature.

"We are like Asterix & Obelix: a small village that lives on its own for a bit. Others start working according to agile now: we have already been doing that for four or five years. There is not a lot of new things on the horizon for us. Some nuances will change, some new people will come and go, but our ways of working here will keep intact" (Meike)

While clearly describing the degree of change and how the contents of it weren't as radical, other interviewees mentioned more that the change process does not 'live with them' very well due to this:

"When you take a look whether it is a hot topic in the department… For engineers, nothing really changes per definition. It is more a strategic level thing, between different parts of the organisation […]. I think we have to take the next step in the coming months and translate tactical to operational level" (Ewoud)

These and other examples showcased a certain degree of passivism that is present: people give indifferent reactions highlighting that change is either small or does not really concern them all that much. The contents of the change process, the implementation of agile project management, was also nothing new: "*The change process is a program that we are going to do, and they will help us with it, but we as the Netherlands are already very agile and we*

already doing most of the content" (2). Thus, these concepts led towards the creation of a 'degree of change and passivism' theme.

When asked to elaborate on whether agile, which is the goal of the change process, is fundamentally good enough for knowledge sharing, another tone was used by the interviewees. Many stated that they have faith in the model and that agile contributes to knowledge sharing, for example through improving communication:

"Not only does agile allow for better knowledge sharing as there is a better structure to focus on tasks, meaning knowledge sharing is less quickly forgotten, but also simply as it clarifies where to communicate and share info to, allowing more knowledge to be sent" (Rik)

Additionally, the mindset that comes along with agile is named as an important result for knowledge sharing: *"Regarding this topic, I would say that the mindset that is associated with agile helps a lot. It is no longer this person does X, and this person does Y and let's see how it will fit in. It is now: let's do this together, work on the challenge together and make sure everything fits in better. The same contribution of agile goes for knowledge sharing I believe"* (Natalie)

While the potential is recognised by many, raising issues and challenges is once again also prevalent. Numerous interviewees mentioned something which indicate that improvements are being made, the department is not quite there yet:

"There are many challenges making agile not works as well as it theoretically can. To start, short communication lines are hard when working together due the global pandemic. Working from home will become the new norm. No fixed working spots makes a team dispersed. Those are only local challenges that probably will fix themselves, but there are many more. It is complex" (Ewoud)

What the interviewees tend to draw attention to is the fact that while the agile system that is introduced offers enough possibilities for and stimulates knowledge sharing in general, the department is not quite there yet. Therefore, the maturity of the change process as an overarching theme emerges from these remarks.

When the interviewees were asked to describe the sharing of knowledge about the change process itself, interesting insights were gained on the change process itself. Interviewees described that in general, enough opportunity was given to gain knowledge and ask about missing knowledge.

"*I think a lot of attention was given to sharing information on the change process. People went to France, or the reverse, not sure. A lot of time is spent on it during our departmental meetings. Additionally, if you had questions, you could always find answers also through the informal ways. Plenty of time and availability of people to clarify things. In general when the main points were clear for you, it was easy to understand"* (Hilda)

"If everything was clear and set in stone (researchers note: not being able to be wrong or to be changed anymore)*, I would have found that weird as well. The vision behind the change being explainable and feasible is really useful and helps me to understand it better. I can find myself in the decision, in how you tackle challenges and how you will realise the vision. That's what I find important, that we can talk about that stuff as well"* (Ewoud)

Multiple interviewees supported the notion that through plenty of meetings, moments and presentations information could be shared and that room was given for any additional questions.

Some of the major challenges that were described about change knowledge were that much of the knowledge and information about the change process came from the group's headquarters in France. Stuck in context or lost in translation, knowledge sometimes became challenging:

"Enough information: yes. However, a lot of knowledge that was communicated were in a strong French context. You noticed the formality and hierarchy, even though the informal part and the thoughts behind what is on paper often is more important. That is what mainly was lacking: people tell what they think other people need to know, but the thoughts behind it matter as well" (Sjoerd)

In general, the top-down nature of the change came forward as well, stating that the change brought along more elements from the headquarters in France:

"I feel like when the headquarters decide to do something a certain way, it tends to get pushed through" (Natalie)

"Here, in the Netherlands, things are clear how the entire situation looks like. When looking over the border, the situation changes: you end up in a matrix organisation where things are still not similar to each other" (Jonas)

When asked to explain how the unclarities or challenges that were caused by this context from other countries, interviewees gave down-to-earth insights:

"I am not the type to worry. Let's see what the change brings. I recognise all the means and possibilities to gain knowledge: I will find a way that I can do my job correctly. But yeah, the context stays vague and abstract for a bit. I am not quite sure if having everything known from the start is a realistic expectation either" (Katja)

Thus, to summarise, the knowledge describing the change process emerge as a topic of the change as well. Therefore, the theme of 'Change process knowledge' is added.

At the end of the interview, interviewees were explicitly asked whether they believe the change process influences knowledge sharing. Many of their remarks were explained simply by stating that the topic is too much of a complex issue to give a comprehensive answer to here. Summarised, the interviewees gave answers as follows:

"I am not sure if it is directly related" (Frits)
"I do not think I see real differences here" (Jonas)
"The line has been continuous ever since I recently joined" (Julia)
"I am not sure if it has to do with the change process" (Oscar)
"I see little change, but is hard since the change process doesn't really live with me anyways" (Sjoerd)

When asked to reflect on whether they are content or not with the change process in general, the consensus was as follows:

"*I am certainly not unsatisfied. Maybe the communication could have been better at the beginning"* (Rik)

"There are no real struggles for me right now, so I am more or less satisfied. The future and coming months will tell us whether the process works" (Julia)

Afterwards, the question was reraised to reflect on how whether the interviewee is content with the topic of knowledge sharing in general. The consensus was slightly more negative highlighting more room for improvement, for example:

"There are some challenges regarding knowledge sharing we are tackling well, and other that we do not tackle at all. For example, how we tackle storing all the knowledge we have is given no thoughts at all" (Fredrika)

Combined these concepts described the impact that the change process can have on knowledge sharing, hence the theme of 'change impact on knowledge sharing'.

These four themes that emerged from the interviews all revolve around the change process. The degree of change and passivism theme showcased that the change process is perceived as not as radical by the interviewees. The change maturity theme underlined how the fundaments of the change process to agile is perceived to have enough opportunities for knowledge sharing yet is not fully implemented yet. Similarly, the knowledge that was shared about the change process itself described the focus on knowledge sharing in the early stages of implementing the change process. Lastly, but not least, change impact on knowledge sharing directly reflected on whether the change process has influence on knowledge sharing and the general contentedness of these practices.

5. Discussion

This research set out to answer how the organisation-wide adoption of a change process towards agile project management impact employee knowledge sharing in an IT department of a large multi-national company. To find answers to this question, this research used a micro-foundation approach which meant that answers towards the question or elements thereof are provided by the employees that are going through this change process themselves. Based on the results of the open-ended interviews with those employees, this research concludes that such a change process can likely impact employee knowledge sharing. This is seen through accelerated removal of centralisation and its replacement by socialisation, a new agile mindset of sharing and more efficient communication processes. Knowledge sharing can be very ambiguous in nature and elements of it differ per person, department, company, and context, which makes this finding hard to generalise and unwise to adhere to in other contexts. The four aggregate dimensions that were found in the results section are discussed to further elaborate on this topic and seven corresponding propositions are made.

5.1 Differences between people

The first aggregate dimension 'sources of knowledge ambiguity' already hint at the repeating topic of variety through the underlying themes. To start, similar as to what Hansen & Nohria (2004) stated about how knowledge sharing offered competitive advantages, the employees know knowledge is key towards the MNC' performance. Additionally, as shown in the results section regarding the 'perceived fundamental importance' of the topic, we can conclude that many people find knowledge sharing to be useful to them personally. While useful, in the theme of ‘inherent restraints of knowledge sharing’, the interviewees also describe that knowledge sharing has very challenging aspects to it. During the interviews, the researcher noted obvious friction created by some of the challenges of knowledge sharing. These practical challenges, as underlined by e.g. Dahl (2011), showcases how knowledge sharing can have real negative impact on employees.

The very form of knowledge itself is found to be different in the ‘differences in knowledge’ theme. Some interviewees noted that knowledge is mostly operational and helps them to do work, while other interviewees highlighted a completely different knowledge that is more contextual and lives in the minds of the people itself. Explicit and tacit knowledge, as Nonaka (1994) already concluded upon, highlights differences in the form of knowledge as well. The employees are a perfect practical representation of the findings of Nonaka (1994), which once again strengthens its widespread acceptance (as e.g. agreed upon by Montazemi et al., 2012). Next to the categorisation that is aligned, employees understood that there is a lot of value in tacit knowledge. As Teece et al. (1997) already concluded, the employees also stated that the tacit knowledge is important to have and share to perform well. Thus, not only the usability of knowledge is found to differ, but the forms of knowledge cannot be put in one category neither.

Additionally, when looking at the theme of ‘required concern due to function’, the differences in the form of knowledge lead to contradicting answer as well. While numerous reasons could be given related to theory, the researcher noted that not every employee was talking about the same topic. As can be seen in the results section, some people focused more on explicit knowledge compared to tacit knowledge of Nonaka (1994). The differences in the answers are thus likely caused by the lack of uniform view on knowledge sharing, as the topic of discussion is not actively discussed by the company. Additional differences could be caused due to the openness for interpretation by the interviewee associated with open-ended interviews.

The very difference in the answers itself highlights that employee think differently about the influence of their role concerning knowledge sharing. Finding mixed answers to the same question can be seen in other themes as well. The themes of ‘contextual factors for use’ and ‘knowledge and temporal use’ highlight that when knowledge is shared simply differs between people. Multiple interviewees stated that their individual opinion and considerations decide whether gaining and sharing knowledge is going to be done. The individual-level factors of Gaur et al. (2019) provide some insights as to why these differences exist. While very little actual study has been done on individual-level factors for knowledge sharing, Gaur et al. (2019) also concluded that individual characteristics such as ability and willingness to engage in knowledge sharing, attitudes and behaviours influence knowledge sharing. While it is hard to accurately tell how big the impact is, the extent to which these topics were discussed by the interviewees might indicate that these individual-level factors play an important role. This strengthens the call for more focus and extension of research on individual actors in knowledge flows.

To conclude, this entire first dimension and its underlying themes highlight how ambiguous this topic can be and how it can differ between people. This leaves the notion that any generalised answer or finding on this topic should likely be taken with severe precautions in different circumstances.

Proposition 1:

Knowledge sharing in MNCs requires more focus on individual actors as knowledge sharing can differ on various aspects between employees.

5.2 Differences through company elements

The aggregate dimension of 'company culture and company topic focus' (third dimension, table 1C) highlights more potential areas of differences. In the company studied in this thesis, transparency is valued a lot and questions can be asked easily. A culture of openness helps to share knowledge as the interviewees indicated and might not be the same for every company. Just as individual-level factors, Gaur et al. (2019) also highlighted that there are firm-level factors that have an impact on knowledge sharing. In this firm, the openness and transparency provide a fertile soil for knowledge sharing. While this is a firm-level factor, the openness towards and knowledge sharing in general stems from the individual level, such as Andersson et al. (2013) suggested. Employees are the ones who collaborate and make knowledge sharing work, in line with Noorderhaven & Harzing (2009) and Zeng et al. (2018). Following these thoughts, as employees are all different it is very likely that factor such as openness and transparency differs between firms.

Next to this, the level of stimulation of knowledge sharing was found to be moderate at best, where knowledge sharing was more or less endorsed but not actively stimulated. Focus and attention on how to share knowledge and how to do it effectively or efficiently might differ between companies. Gaur et al. (2019) mentioned that studying what level of factors are concerned is always challenging due to nested nature of these factors. This leads to the idea that all factors are nested: individual are part of a company, and companies’ parts of different countries. Interviewees highlighted this nested approach as well, stating that differences in departments are likely there due to differences in individuals. What is noteworthy to mention is that the interviewees highlighted several differences between the department and the individuals / the company. What we see is that in a context of a large company, for example a MNC, it might be accurate to add a 'departmental-level factor' as a fourth level between the individual and a company. While Gaur et al. (2019) did study knowledge sharing in MNCs

and knowledge sharing between subsidiaries, it appears to be the case that there are differences between subsidiaries not explained by firm-level factors alone.

Based on the differences described by the employees, when one location of a MNC is quite large, differences can be found between firm departments. One could also consider a department in a large subsidiary as a 'meta-firm'. A 100 employee, semi-autonomous, department that is there to make sure systems work for the other 2000 employees of the firm would in some contexts be considered a firm by itself. From this perspective, adding a departmental-level factor might more accurately describe insights. To conclude, next to previously explained ambiguity caused by differences between people, there is likely ambiguity caused by firm- and 'departmental'-level themes. It would make sense that differences can be seen between different companies, thus also adding to the fact that generalising results is a tightrope to walk.

Proposition 2:

In large size MNCs, differences between departments can exist and likely impact processes such as knowledge sharing, similar as to how individuals and firms can.

5.3 Areas of impact of the change process on knowledge sharing

Having discussed the ambiguity of the topic and highlighting the challenges of drawing a general conclusion, it is important to discuss some of the possibilities as to how the change process can influence knowledge sharing.

To start out, the dimension of 'sources and means of knowledge sharing' (dimension two, table 1B) highlights several integration mechanisms of knowledge sharing. The insights of the employees are quite corroborating as e.g. socialisation is seen as major means of sharing knowledge (in line with Gupta & Govindarajan, 2000). Grøgaard & Colman (2016) found that socialisation leads to more willingness to share knowledge, which for example also can be seen in the indicated transparency and openness of employees as discussed earlier. As mentioned by interviewee (Rik) among others, verbal processes and socialisation is used to share "Exactly how things work, which cannot be simply read in a document". This emphasises socialisation as a dominant means of sharing tacit knowledge (Nonaka, 1994), in line with what Dhanaraj et al. (2004) found.

However, as for example Ambos & Ambos (2009) stated, formal mechanisms such as formalisation are still beneficial and, in this sample, remain frequently used tools. Many interviewees highlighted the vast amounts of means of non-verbal knowledge sharing e.g., through a wiki, intranet, and chat rooms. In consonance with Gupta & Govindarajan (2000), the amount and the effectiveness of communication channels make it so that knowledge can be transferred easily. The main type of knowledge that was shared through this mechanism is explicit knowledge (in line with e.g. Lee et al., 2011), for example how to work on a certain system or software. The amounts of knowledge in non-verbal, formalised mechanisms and the need for this explicit knowledge show that formalisation as a mechanism is not likely to decrease in use either. This leaves the conclusion that verbal and non-verbal knowledge sharing, or socialisation and formalisation mechanisms, must co-exist with each other. As they are used for different purposes and serve as a means of different types of knowledge, knowledge sharing in a MNC is seen to be facilitated by both mechanisms. Following Ambos & Ambos (2009) and Keupp et al. (2011), this was to be expected as well.

Another prominent difference between the two mechanisms is that interviewees were very able to describe challenges with non-verbal (formal) mechanisms. A lot of issues were raised about documentation, hinting for improvements to be made in order to share knowledge better or more efficient. Logically so, as improvements are easy to see and highlight for the interviewees due to their explicit nature. Knowledge through non-verbal means it is either good and clear to be used or is vague and should be improved upon.

When we consider socialisation and verbal means of knowledge sharing, interviewees had a harder time mentioning challenges of sharing tacit knowledge. Tacit knowledge in nature is more complex Scattered throughout the interviews, interviewees did for example mention that they get 'different answers depending on who they ask' or that there are a lot of 'ticket booths where you get answers'. These challenges were significantly less present throughout the interviews, possibly due to the more complex nature of tacit knowledge. Challenges regarding sharing knowledge through socialisation are more complex to highlight and propose concrete improvements for. Arguably, this could be because decontextualisation of knowledge is so difficult as Mukherjee et al. (2019) concluded upon. All kinds of factors (individual-, firm-, departmental- and country-level) and cultural elements (language, values, and practices) make decontextualisation hard. In turn, this creates the challenge in easily suggesting improvements for improving 'sharing knowledge through talking'. This leads to the following proposition:

Proposition 3:

Employees can less effectively share improvements for tacit knowledge (through verbal means) than for explicit knowledge (through non-verbal means). Measuring this solely through open-ended employee interviews magnifies this challenge.

Here, a major challenge is unearthed through the micro-foundation approach. It showcases that there are little to no direct insights on how to improve verbal means of sharing tacit knowledge. Thus, as Abell et al. (2008) argue the benefits of a micro-foundation approach as a methodology to measure, it provides no solutions in this context. In general, the challenge makes sense to not be easily solved by employees. Knowledge sharing is important for a company as defined by the interviewees and is a topic residing in strategic and organisational context according to Van Wijk et al. (2008). The challenge of improvement cannot solely be solved by employees but needs support from the organisation. Due to the specific change process towards agile, some friction might occur. The researcher noted that sometimes interviewees argued that since agile means self-organising, that e.g. this challenge should be solved by a squad on its own. The contrary seems true now: some challenges are so complex and strategic (Van Wijk et al., 2008) that they need interference of the company. Agile ways of working seem to not translate in a hands-off approach for companies regarding improvement of verbal knowledge sharing. Therefore, proposition four is as follows:

Proposition 4:

Even in teams working according to agile, with a high level of self-organisation and responsibility, employees alone can likely not solve challenges of knowledge sharing on their own due to its strategic nature.

The only integration mechanism of Zeng et al. (2018) that is not discussed is centralisation. There were little to no insights into the mechanism of centralisation, which is not a surprising outcome. Interviewees stated that the role of the headquarters (e.g. Kim et al., 2003) in knowledge sharing is very small. Furthermore, explicit knowledge is already being shared through formalisation and the large amount of socialisation substitutes for the need of centralisation. This is true to the research of Zeng et al. (2018) as well.

However, it is too straightforward to say that (following Zeng et al., 2018), these results contrast prior research findings on the facilitating role of centralisation. In the interviews done, knowledge sharing with the HQ ('centralisation') only got mentioned after explicitly asking to elaborate on it by the researcher. After this was done, interviewees highlighted that they saw improvements in sharing knowledge with other countries, mainly the country of the HQ. While sharing knowledge with the HQ does not fully encompass the centralisation mechanism, changes in the amount and frequency of knowledge shared were noticed. Knowledge sharing with other countries is a goal of the change process being implemented; centralisation is not. Arguably, little to no knowledge sharing with the HQ might be explained by the fact that centralisation is a mechanism that was ruled out for a long period as argued by Ciabuschi et al. (2010). No knowledge was shared from the HQ to a specific country, as local subsidiaries were deemed too complex for the HQ to understand (Zeng et al., 2018). Knowledge sharing with the HQ was stopped and now demanded to be restarted, although through the socialisation mechanism instead.

Since change is a process, it might be possible that knowledge sharing with the HQ is still in a start-up phase where sharing of knowledge needs to be re-kindled over time. Possibly, the first steps of this process are those that the interviewees described. This could possibly extend literature of how change processes impact knowledge sharing: it can accelerate removal of

centralisation mechanisms. This resonates closely with what Zeng et al. (2018) found: socialisation seems to be used as a replacement mechanism of centralisation.

The following proposition was formulated in the context of the above-mentioned:

Proposition 5:

Change processes, e.g. to agile, can possibly impact knowledge sharing, seen through practical examples such as accelerated removal of centralisation and replacement by socialisation mechanisms. Additionally, an agile mindset of sharing and more efficient communication processes could be results of the change process.

5.4 The change process and its relation to impact

Last but not least, dimension four 'change process influence' highlights results that give insights on the context of the change process itself. A reoccurring theme that was raised by many of the interviewees is how the change was not radical in nature and that the actual changes that were implemented were viewed as rather superficial. Interviewees highlighted that they perceived themselves as already working agile and that therefore the change process did not include a lot of change. As a follow-up, many also mentioned that the change did not really impact them or resonate with them personally.

When we consider the definition of agility by Conboy (2009) that consist of flexibility and leanness, possible insights into these remarks can be gained. Many employees highlight that leanness (contribution to customer value through economy, quality, and simplicity) was already present due to previous ways of collaboration. Logically so, this part of agility did not change for their perspective and therefore can be argued to be present in the department. A challenge is found regarding flexibility and its definition: "the ability to create change or proactively, reactively or inherently embrace change in a timely manner, through internal components and relationships with the environment" (Conboy, 2009). Since change is provided top-down it needs to be embraced by the employees. However, a department is not solely a closed-off group of employees. It interacts with its environment and more importantly, it uses those interactions to handle change according to Conboy (2009).

In those interactions, the nuance of the challenge of this change process is seen. Interviewee (Meike) provides the comparison with the comic "Asterix & Obelix", noting how they are a small village that live on their own. Describing how they 'bravely resist and fight against the invasion of a bigger force', it showcases a mentality of resistance to change. While there is no real evidence for resistance to change, a certain degree of passivism to change can be seen through the insights. Many employees were satisfied with their former way of working and are proud of their bottom-up progressiveness, as showcased by previous internal research. As a result, some employees turned passive against the change process due to its top-down nature and in turn fail to be flexible. Following the research of Conboy (2009), they also fail to fully meet the definition of agility. Thus, passivism quite possibly moderates the impact of a change process to agile, and therefore also its subsequent impact on knowledge sharing.

Zooming out, this passivism to top-down change draws attention to a fundamental challenge of implementing a change process towards agile. The task of top-down implementation of agile throughout an enormous MNC spread over different countries, working in different ways and consisting of very different employees is simply enormous and very difficult (e.g., Annosi et al. 2020). This further complicates having everyone meet the requirement of agility, reflected in this sample through employee passivism.

According to the interviewees, enough change resources (Hobfoll et al., 2018) were provided by the conventional means (Gong et al., 2012). While there were challenges in e.g., information being encased in a foreign context, in general the interviewees were content with the information they had. Where knowledge was unclear, a general down-to-earth attitude approach was taken by the interviewees. No clear signs of meaning making (Hobfoll et al., 2018) were seen and most interviewees had trust in the fact that knowledge is already shared or will come when deemed necessary. The insights of passivism pave the way to discuss the insights of the interviewees related to the availability of change resources (Hobfoll et al., 2018) as well. Interviewees highlighted that they were provided enough information and knowledge about the change.

When the passive relation towards the change is considered, the nuance between employees not needing additional change resources or simply not being bothered to gain them is lost. Arguably, passivism can also be seen in the fact that few interviewees actively searched for knowledge about the change process and thus neither indulged in meaning-making. In hindsight, more in-depth insights could have described whether employees really had enough resources or simply did not bother to gain them.

What is more is that arguing that employees did not desire to obtain change resources and neither indulged in meaning-making directly contrasts the theory of Hobfoll et al. (2018). Hobfoll et al. (2018) posits that people are intrinsically motivated to obtain resources to e.g. deal with change would then not hold true when people are too passive/resistant towards the topic at hand. These conclusions would however be short-sighted and could rather be explained by the experience of the employees. Due to their earlier ways of working, focused on leanness through e.g. scrum, employees are already able to make sense what is going on. Additionally, this explanation strengthens the notion that indeed employees had enough change resources even though passivism was present. The employees already have the necessary resources to make sense of the change to agile and therefore do not need to seek additional resources. This is also in line with the earlier mentioned gratification of information provided.

To conclude, the findings provide no concrete evidence that passivism towards change to agile results in not obtaining or needing change resources. This would result in the insight that passivism does not have to be a problem in the implementation of a change process: passivism does not necessarily result in employees not having the required resources to deal with a change process towards agile.

When asked if they believed that agile offers enough opportunities for knowledge sharing, many interviewees agreed. They highlighted practical changes that they believed were associated to working through agile project management, such as being able to communicate more clearly and bringing along a certain mindset of sharing knowledge. These changes are close results of agile practices described by Chau et al. (2003) such as daily stand-ups and retrospectives. Even with the consensus that the degree of change caused by the change process was relatively small, these improvements of knowledge sharing can be linked to the introduction of agile project management. This could mean that in theory the change process towards agile had impact on knowledge sharing. However, this is more a proposition than a conclusion: it remains hard to pinpoint if the change process towards agile directly contributed to these improvements.

The small degree of change results in the fact that many interviewees did not see clear improvements in for example efficiency or effectively of knowledge being shared. When asked directly, interviewees were not able to give a clear-cut answer as to if the change process influences knowledge sharing. While most of the interviewees highlighted that the topic was too complex to summarise like that, having a small degree of change likely does not help with recognising the changes either. This makes sense when considering the methodology of the micro-foundation approach (Abell et al., 2008) to get to these results. As Abell et al. (2008) also highlighted, you logically cannot gain insights from people when they do not know or notice a phenomenon. As an illustrative example, interviewee (Juliana) stated that she is not certain if the change process impacts knowledge sharing, but that she is very certain that *'knowledge shared impacts the change process'*. Knowledge shared is easier to recognise than knowledge sharing as a concept, and same goes for how change impacts these topics. Thus, due to the small degree of change, 'thin' insights need to be considered carefully especially when generalised.

Two final propositions are set based on the above:

Proposition 6:

Passivism can be the result of the implementation of a very large and worldwide change process, that is partly untailored to local experience and wishes. Passivism, for example towards the change process towards agile, can plausibly moderate the impact of a change process on knowledge sharing.

Proposition 7:

Passivism towards a change process can possibly lead towards passivism to gain change resources. However, through e.g., previous experience, the necessary change resources may already be present, eliminating related challenges.

6.1 Academic relevance

This research makes two important contributions towards existing academic research on knowledge sharing in MNCs. First, the research contributes towards the study of knowledge sharing in MNCs and especially tackling the issue of oversimplification of the boundary conditions of this topic. As it has been called for by other academics (Bartunek et al., 2006; Judge et al., 1999; Oreg et al., 2011) more research needs to be done to see whether knowledge sharing is similar in different circumstances or not. Results indicate that although results need to be approached carefully when compared to other contexts, differences due to the impact of a change process might indeed exist. By looking at how knowledge sharing is seen during MNC-wide change processes, the research extends the understanding of knowledge sharing and further highlights the importance of avoiding over-generalisation of the topic at hand.

Second, the research answers a call for putting more emphasis on the role of employees in both knowledge sharing and change processes. Employees are a major stakeholder in both the knowledge sharing process (Andersson et al., 2015) as well as the change process (Bartunek et al., 2006). In the meanwhile, most of the studies still focus on subsidiaries and advantages of knowledge sharing in MNCs. This research studies how employees experience knowledge sharing, during change, through the employees their own experience and thoughts. Additionally, in lieu of oversimplification issues with knowledge sharing theory, the research highlights that the multifaceted nature of knowledge results in differences to be seen between employees. The micro-foundation approach (Abell et al., 2008) was particularly useful to highlight this.

This research also contributes to Gaur et al. (2019) inhibitors and enablers of knowledge sharing, showcasing that in large size MNCs there might be difference between a department and the firm. Therefore, a departmental-level factor might be warranted. Next to this, the research possibly extends the literate of how change processes can influence knowledge sharing. Insights show that it can accelerate removal and replacement of centralisation mechanisms of Zeng et al. (2018) by socialisation mechanisms. Furthermore, the prominent role of socialisation is seen here as well, next to it being a replacement mechanism for centralisation. This all resonates closely with Zeng et al. (2018), except now in the context of a change process. Finally, the research provides further implications of the Conversation of Resources (Hobfoll et al., 2018) theory in change context. The study shows that passivism does not necessarily mean a lack of change resources by employees in context of change processes towards agile.

6.2 Practical relevance

If anything, the insights suggest that managers and companies alike should strive to actively stimulate knowledge sharing. This can be done through allowing people weekly dedicated time to spent knowledge where they can also discuss how knowledge can be shared more efficiently and effectively. Solely acknowledging the importance alone leaves no room on the already agenda for these kinds of discussions. Practical outcomes could look like re-kindlement of knowledge sharing with the HQ, even after years of no longer sharing knowledge in lieu of trying to de-centralise. Following the insights from this report, socialisation with the HQ can be impacted by such a change process. By fully integrating and stimulating this in the change process, practical improvements could be seen.

What is more is that even within a self-organising agile setting, managers should aid and think along how to improve knowledge sharing together with the employees. As is showcased by the many insights through the micro-foundation approach, talking and asking questions is a very fruitful way of gaining insights. Through everyday language, small but important areas of improvement are underlined. However, employees alone likely cannot fix such a large and strategic topic by themselves. Similarly, passivism towards the change process with the sub-goal of sharing more knowledge likely means passivism towards knowledge sharing as well. Encourage talking about the topic, think along and get involved to be sure the topic does not go by unnoticed.

6.3 Limitations and future research

While this study has several interesting insights on the impact of a change process on knowledge sharing, it has its limitations as well. First off, one of the major challenges of potential future research is to tackle and clarify the multifaceted nature of the topic of knowledge sharing. The main concern is that even though this research sample size consisted out of sufficient participants that gave useful insights, the population from which the sample was taken was only one department of one company. This likely leads to generalisation issues to other companies or even inside the same company, as the department only covers around 10% of the total on-site workers. It is hard to generalise the findings to other contexts, which is further enlarged by the multifaceted nature of knowledge sharing. For example, the dimension of 'company culture and topic focus' that emerged from the interviews, highlight that the topic of knowledge (sharing) will differ between companies according to these values. Looking at a bigger perspective, all participants were Dutch in nationality, had a relatively high level of education and were working in a for-profit business IT department. It is possible that different results can be found if interviewees are related to a different nationality and culture, education, or type of company. This leads to the recommendation that there is room for future research on the same topic of what impact a change process has on knowledge sharing. To start, to gain results that can be generalised, research should include different sectors, companies and or departments to allow comparisons between the different contexts. This study resulted in little direct insights on what the impact of the context of being a large MNC is, which could be further clarified when using a broader comparison sample. Ideally, this sample would also include a more diverse population (language, country of origin, education level) that is used to gain insights.

Second, no longitudinal element was covered for due to the limited research time. It might be more accurate to measure, as change is a process, how knowledge sharing changes during a certain period instead of one moment of measurement. Additionally, as Stouten et al. (2018) also described, change is a process where the outcomes are not immediately known if they work or are effective. In this light, the outcomes of the impact of a change process on knowledge sharing might as well occur in a later period. Further studies could thus be more longitudinal in nature and should include taking measurements over time, such as before the change process started and after a set period during the change. This would better mirror the process element of change and therefore likely give more accurate results.

Lastly, this research is qualitative due to its explorative nature, and while some degree of bias is being avoided by using the micro-foundation approach with open-ended interviews, bias might still exist. The researcher tried to be as transparent as possible yet has several weeks of exploration and discussion time inside the company of analysis, leading to possible interpretation bias. Having explored this topic through an explorative, open-ended approach, future research could also aim to be at least quantitative in approach or seek to use a mixed-methods approach. Via the latter approach, the valuable in-depth insights of a micro-foundation approach are ensured, enabling good insights in for example individual-level factors (Gaur et al., 2019). Furthermore, the quantifiable results allow to see if any concepts, themes, or dimensions as presented in this study have a (strong) relation to impacting knowledge sharing. These quantifiable results would additionally further allow for easier comparison between different sample groups than its qualitative counterpart.

7. Conclusion

To conclude this research, the insights gained through the open-ended interviews describe that knowledge sharing is a multifaceted topic. Knowledge sharing appears at its core as two categories of tacit and explicit knowledge as described by Nonaka (1994). Employees use and need both types of knowledge and have different challenges associated with them. Multiple integration mechanisms of predominantly formalisation and socialisation explain how employees go about sharing knowledge, in lieu of the findings of Zeng et al. (2018). Individual differences can be seen throughout resulting in impact on e.g., how useful employees perceive knowledge sharing, determining their concern in relation to their role and how and when to use and share knowledge. Not only do these individual-level factors (Gaur et al., 2019) have an impact, firm-level factors do as well. Different firms, companies and quite possibly also departments inhibit or enable elements of knowledge sharing, such as what degree of a 'company culture of sharing' is present. All these dimensions and themes thus make knowledge and knowledge sharing multifaceted, resulting in hard to generalise findings. The findings also both show changes and similarities in knowledge sharing due to the impact of the change process. The explicit and tacit forms of knowledge (Nonaka, 1994) are still both visible and co-exist while serving different purposes. This is done through socialisation and formalisation, as seen as before. Centralisation (as a thin description of sharing knowledge between a HQ and its subsidiary, Zeng et al., 2018) was not present and is now seen in another form. Knowledge sharing with the HQ is in theory traditionally described as a centralisation mechanism, but here it occurs through a socialisation mechanism instead. Even though a certain degree of passivism is seen throughout, employees have enough change resources (Hobfoll et al., 2018) which indicates that passivism does not lead to a lack of change resources towards agile project management. Other findings, such as the change process positively impacting communication or creating an agile mindset of sharing, can possibly be the result of the impact of the change process. Passivism towards the change process likely moderates the impact of the change process on knowledge sharing. However, since the degree of change is quite small in this sample, the results are hard to attribute to the actual change process resulting in proceeding with caution towards generalisation. With some indications of positive impact, it leaves the conclusion that there is a need for further research on the impact of change process on knowledge sharing in MNCs.

With first-hand experience, actively thinking and discussing about knowledge sharing is not something which is common for everyone. Acknowledging how much time every single employee, including you, spends on gaining knowledge and sharing it with others is the first step towards exploring this topic more. This hopefully will not only make the everyday workload ever so slightly easier but can additionally help during dynamic change periods. Either big or small, all of us are bound to experience a change process in the time of our own life. If the micro-foundation approach teaches us anything at all, it is that sharing with each other teaches us the most during that time.

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Appendix

Appendix A: Interview guide used (Dutch)

Interview guide

Kennis en kennisdeling tijdens een veranderproces naar agile projectmanagement in een grote MNC

Introductie

- Persoonlijke introductie, introductie interviewee
- Korte introductie tot doel van onderzoek
- Opname, transcriptie en deelname onderzoek
- Anonimiseren van data, opslag en interne protocollen
- Uitleg open interview, niet geven van inzichten en geen fouten antwoorden
- Toestemming tot deelname en opname

Keywoorden: wat, hoe, waarom, tot welk niveau, in welke maat, Kan je wat meer vertellen hierover; Wat is de achterliggende reden volgens jou; kan je dat verder uitleggen

	Open vragen	Vervolg/verdieping vragen
Algemeen, kwaliteit en kwantiteit	- Wat betekend kennis en kennisdeling voor jou? - Kan je beschrijven hoe veel je bezig bent met kennis (deling)? - In welke maat wordt kennis gedeeld? - Is gedeelde kennis volgens jou op niveau? - Hoe snel onderneem je actie naar aanleiding van nieuwe kennis?	- Kan je een voorbeeld van kennisdeling geven? - Is dit altijd hetzelfde of fluctueert dit over tijd? - Waarom onderneem je op die termijn actie?
Reden achter kennis en kennisdelen	- Welke rol speelt [bedrijf] Nederland als bedrijf hierin? - Welke rol speelt de IS/IT afdeling hierin? - Welke rol speel jij hierin? Wat doe je specifiek? - Zie je verschillen of gelijkenissen tussen anderen mensen en jezelf?	- Kan cultuur hier een rol in spelen? - Kan je een voorbeeld geven?

Hoe wordt kennisdeling gezien	- Op welke manier wordt kennis gedeeld? - Krijg jij kennis van of deel jij kennis met [bedrijf] Frankrijk? - Krijg jij kennis van of deel jij kennis door centrale plekken? - Krijg jij kennis van of deel jij kennis door sociale processen?	- Hoe veel, in welke maat? - Als je een verhouding moest geven, hoe zal je deze 3 manieren verdelen? - Wat voor plekken zijn dit? - Waar gebeurt dit het meeste?
Invloed van de introductie van agile	- Was het veranderproces naar [naam] duidelijk voor jou? Waren er onduidelijkheid over het veranderproces naar [naam]? - Had de onduidelijkheid aan het begin hiervan invloed op kennis (deling)? Zo ja, op welke wijze? - Was er genoeg informatie over dit veranderproces te vinden? - Heb je verandering in dit onderwerp gezien sinds [naam] is geïmplementeerd? - Beinvloed het veranderproces kennis en kennisdeling? - Naar jouw mening, bied [naam]/ hoe we nu samenwerken genoeg manieren om kennis te krijgen en te delen?	- Kan je een voorbeeld geven van een concreet iets wat veranderd is? - (Indien kort bij organisatie: wat heb je gehoord van collega's wat anders was?) - Hoe heb je de informatie over het veranderproces eventueel alsnog kunnen verkrijgen? - Wat is voor jou de achterliggende reden hiervan? - Op welke manier gebeurt dit?
Mensen tijdens veranderproces	- Was er overgebleven onduidelijkheid? - Hoe veel moeite koste het om deze onduidelijkheid op te lossen? - Speelde je eerdere ervaring of vaardigheden in het begrijpen van dit veranderproces?	- Wat deed je hiermee? - Zijn er recentelijk/nog steeds onduidelijkheden over dit veranderproces?
Overige	- In hoeverre ben jij tevreden of ontevreden over het veranderproces naar [naam]? - In hoeverre ben jij tevreden of ontevreden over kennis en kennisdeling binnen IS/IT? - Wilt u nog iets zeggen over dit onderwerp?	

Appendix B: Additional quotes supporting the themes

Dimension one: Sources of knowledge ambiguity

Perceived fundamental importance

"Knowledge helps to prioritise on the customer needs and makes sure you are not busy with the wrong things" (Arjan)

"Knowledge is temporary, meaning that you always need it. What I can do with my knowledge now, is no longer relevant or accurate tomorrow. That is why knowledge is always needed" (Jonas)

Differences in knowledge

"There is knowledge for me how things work, and knowledge that we need to share regarding how we collaborate together" (Fredrika)

"There is technical knowledge and knowledge on how to do things, how to best go about your work" (Sjoerd)

Restrains in knowledge sharing

"Experts should seek to share more knowledge with less experienced people" (Jonas)
"In the long run, no more knowledge can be shared about legacy systems, which is going to cost the company a lot in the long run" (Juliana)

Required concern due to function

"As a PO, I need to prioritise for which I need knowledge what others are doing and thinking" (Arjan)

"My role requires me to be open for new knowledge and sharing that" (Fredrika)

Contextual and situational use of knowledge sharing:

"Gaining knowledge depends on whether I believe the project is easy or not. If we believe the project is clear what needs to be done, we go ahead and do it'' (Meike)
"I share knowledge when I consider it important or useful" (Natalie)

Knowledge and temporal use

"Sometimes it is hard to explicitly think about sharing and knowledge when making a decision. To say and think: hey, we should document this to share it later is not always the case. But sometimes it is very obvious as well" (Fredrika)

Dimension two: sources and means of knowledge sharing

Social / verbal means of sharing

"A while ago we had a recently graduated person working with us. When we did a migration, we just made sure that he or she was present and could also look along us, and now we see him picking those migrations up himself" (Meike)

Documenting / non-verbal means of sharing

“I think we have a lot of our information on our wiki page, especially for my team. We really have a load of pages per topic, per project, where you can find details and information about the architecture, how we want things to be, but also mainly practical steps how to achieve this such as how licences are connected to it.” (Rik)

Documenting challenges:

“*Wiki sometimes are mazes, and you cannot find what you are looking for; I think that we do should centralise them more, so that I can access the wiki from another country as well”* (Jonas)

“I use it very rarely; there is a framework of processes, so I should be able to find a lot, but actually using it… is something I have maybe done a few times. I do not know what I really can find there” (Arjan)

Headquarters and knowledge sharing

"As of recent, I see that we are sharing more information with and coming from the group" (Hilda)

"I actually do not do that much with the group, that is too big of a concept for me. I look at my own department and people: the only thing I do is sit in a 30-minute meeting with international colleagues on job specific things. Other than that, I really do not have a direct relation with the group" (Natalie)

" I am connected to an international community for which we meet an hour every week. It is a community, but in general, it is the same four people joining in every time. It makes me wonder; are we reaching our potential, are we really actively doing this?" (Katja)

"If you consider bringing or getting knowledge... Than it is mainly getting instead of it being brought to us. However, once you have the correct people, they are open to share everything, but that is really our company thing" (Mick)

<u>Dimension three: Company culture and company topic focus</u>

Employee culture of openness

"I find everyone to be very approachable and that you can always ask questions, even though not always an answer is or can be given" (Arjan)

Individual employee characteristics

"I want to know what is going on, and if I do not know or have the knowledge to, I aim to find it" (Mick)

"Trying, at least, to see the process and the organisation in a broader perspective in order to look beyond the close horizon. What does the company benefit, instead of only our department or you? I try to make that into everyday terms. I try to lessen distance between the rest of the organisation" (Arjan)

Company stimulation and focus

"I think they know that it is very important, but I feel like there is not enough attention to it yet. For example, it is no secret that we have a few older people in the workforce. The

knowledge that they have is lost when they left in the current system. I feel like for example there, we can do more" (Rik)

"I really like it how they have unlimited budget for gaining knowledge, room for sharing knowledge with colleagues, that role they really facilitate well. I have never really experienced this kind of budget in any company ever for personal development, and therefore also gaining and developing knowledge" (Juliana)

Departmental role and focus

"We have an active role in moderating the tools used for sharing and storing knowledge. We could maybe play a more active role in this. I feel like we should think about the way we share knowledge and make it easier for them" (Ewoud)

"Many people outside of our department see us as a laptop distributor, but we can so much more knowledge with you and help with the challenges you are facing regarding these topics" (Sjoerd)

"While it is worse than in other departments, sometimes someone leaves that knows a lot about various topics. In a year, 120 years of experience leaves the company due to 3 or 4 people leaving. I believe that we, as a department, can focus more on retaining that knowledge" (Rik)

"Having younger and more dynamic people helps to create a better environment as well" (Jonas)

<u>Dimension four: Change process influence</u>

Degree of change and passivism

"I was involved with everything quite a bit from the start. From that moment on, we already said: good plans, but basically, we are already working like this. We, the Netherlands, are a bit stubborn: we think we know everything better. Often this is the case, but in practice it has to prove itself" (Sjoerd)

"*For the Netherlands, no big changes came to a certain degree as we were doing most of those changes already compared to e.g., Germany"* (Julia)

"The change process doesn't really resonate on my level and neither the teams where I do a lot with it. Sometimes you overhear something, or something is said during a central meeting, but yeah, not really" (Natalie)

"It is really not close to me if you ask me. So, yeah, it was already here when I started, the impact is not really that big" (Arjan)

Change maturity

"*Yes, I find that we are making progress. Especially for certain themes, such as comparing us to other colleagues to the group and seeing if we are fit to each other, come up more often."* (Fredrika)

"I believe that agile means self-organising. We are expected to be just that, so we should also self-organise how we will fit this inside the team and the work we do. I think every team has this level of freedom, but whether all teams use it differs a lot between teams" (Katja)

Knowledge of the change process

"I feel like the process could have gone more way more quickly, but since the change is also being done in e.g., France, we are being held up" (Jonas)

"I did not really explicitly look for answers. I had a feeling of 'well, we will see and if there are really important things, we will hear about them" (Rik)

"There will always be unclarities. However, none of them are currently problematic – and if so, we would encounter them sooner or later and try to fix them right there" (Hilda)

Change impact on knowledge sharing

"There are highs and lows in the process of implementation, just like how a wave exists. I feel like this is normal for any process" (Fredrika)

"I am content, because I feel like the communication about it was clear enough" (Mick)

"It is easy to highlight improvements that we still need to make. However, we have a reliable and open organisation, which is a good indicator here" (Ewoud)

"We have non-verbal challenges that are clear definitely still need changing" (Oscar)

"While I am somewhat content, I notice that sharing with others outside our department needs work. We need to up the quality of that somehow" (Sjoerd)