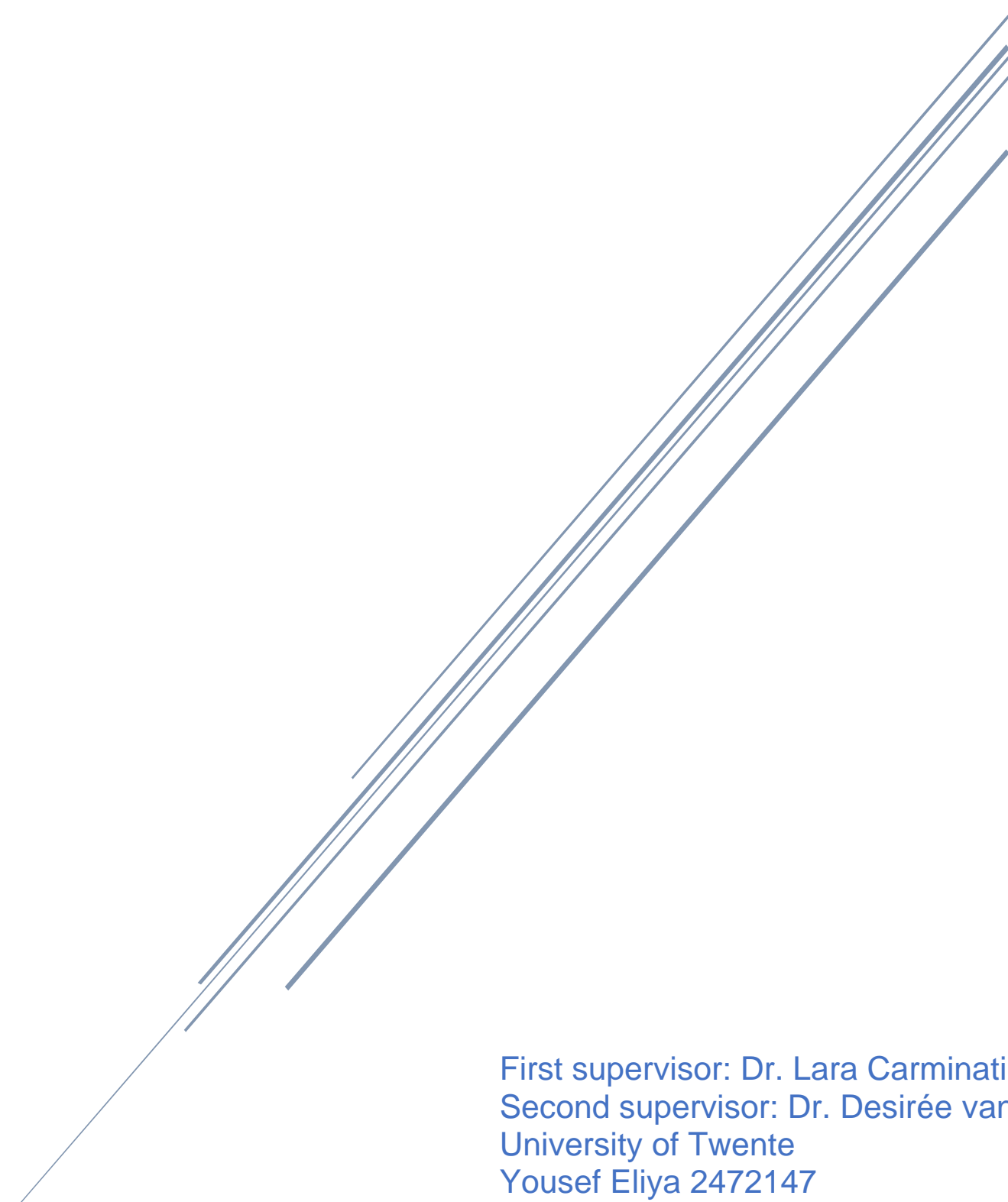


IMPLEMENTING AGILE TEAMS: A QUALITATIVE STUDY ON THE ADOPTION OF SCRUM TEAMS IN SMES

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First supervisor: Dr. Lara Carminati
Second supervisor: Dr. Desirée van Dun
University of Twente
Yousef Eliya 2472147

Abstract

Recently, many organizations have started noticing the ease and efficiency that Agile provides for managing projects. Thanks to its benefits, many organizations are currently adopting Agile and, more specifically, the Scrum framework. Within this framework, employees are divided in small teams, usually fewer than nine people. The team members work together on delivering a usable product in every timeslot. The duration of each timeslot inside the Scrum framework is on average between one to four weeks. Although the popularity of Scrum made it the most used framework around the world in large organizations, Scrum adoption in SMEs received little scholarly attention, which is peculiar given that Scrum was developed in teams within smaller organizations. To address and fill this gap in the literature, the first step of this thesis was a literature study to point out the enablers and inhibitors of Scrum adoption in large organizations. Then, through purposive sampling, 12 interviews were conducted with employees from three divisions of one SME from the IT sector. The sample of the employees included owners, managers, consultants, and developers. The collected data were analyzed using thematic analysis, hand in hand with Gioia's methodology. Based on the data, a comparison was made between the enablers and inhibitors of large organizations found in the literature and the ones of SMEs collected from the interviews. Based on the result of this comparison, this thesis added several enablers and inhibitors to the literature on Scrum adoption in SMEs. Among the enablers are: *Being familiar with working according to defined roles, having periodic feedback sessions, having the right tools, motivating employees, and being less flexible towards customers*. Regarding the inhibitors, the following were found: *Different role expectations, the implementation should not be done by a new person, SMEs are too small for Scrum and SMEs are more flexible than Scrum*. In addition to enriching the literature on Scrum adoption in SMEs, this thesis provided some practical implications for SMEs' managers which can help them implementing Scrum in a more effective way.

Keywords

Agile, Scrum adoption enablers and inhibitors, SMEs, qualitative methods

1. Introduction

In the recent years, people have started questioning the traditional ways of managing their projects and started searching for alternative methods of working (Abbas, Gravell, & Wills, 2008). Traditionally, people were used to work with a set of requirements and restrictions that guide the whole process. Due to these requirements and prescriptions, the traditional working methodology has become known as the 'heavyweight method of work' (Awad, 2005). According to Awad (2005). People working according to this heavyweight method are expected to follow a well-defined series of steps, such as setting a clear definition of the work, clear description of the steps that need to be followed, and the actors are expected to be involved.

However, as the world has been changing rapidly, such traditional methodologies cannot keep up with the constantly evolving needs of the environment (Moniruzzaman & Hossain, 2013). To overcome this problem, software development teams started to build a new method of working. With this new method, the focus on the fixed development phases is shifted to more dynamic phases that consist of shorter sprints where verification and testing occur more often. This new methodology of working is called Agile working (Spiegler, Heinecke, & Wagner, 2021). According to Layton (2015), the Agile method is a mindset for managing projects with focus on flexibility to survive the fast-changing environment. The idea behind the Agile methodology is that teams can breakdown tasks into smaller ones while keeping customers involved in the various developmental phases. This gives customers the ability to quickly provide feedback through all development phases which results in delivering more valuable products in a faster way with fewer problems (Layton, 2015). Furthermore, the Agile method focuses on discovering the needs of the market early, continuously improving products and processes, and delivering products that satisfy the needs of the customers (Layton, 2015). For all these reasons, albeit around for more than 50 years, the Agile methodology has received increased attention over the last decade and several frameworks have been developed to support its implementation (Whiteley, Pollack and Matous, 2021).

At this time, there are more than 40 frameworks developed for Agile (Shastri, Hoda, & Amor, 2021), with Scrum, Kanban, and XP being the most adopted frameworks around the world. Since Scrum is the most used framework in managing projects (Shastri, Hoda, & Amor, 2021),

this thesis focuses specifically on this framework. Scrum teams work with sprints that last between one to four weeks on average. A sprint could be described as a time-box that contains all the events related to one product or process that should be done within a specific period of time (Layton, 2015). After each sprint, Scrum teams are expected to deliver a “usable” product (Hoda, Noble, & Marshall, 2010). As will be elaborated later in this thesis, within Scrum teams there are three roles, namely, the product owner, the Scrum master, and the developers (Tihlarik & Sauer, 2021). Because of the ease and efficiency that Scrum teams provided, enterprises started to adopt Scrum teams in their style of managing projects (Layton, 2015).

According to the 15th edition of the State of Agile Report, which is one of the oldest continuous annual reports on the development of Agile and Scrum teams around the world, the Agile adoption among enterprises increased to 86% in 2021 compared to 37% in 2020 (Knaster, 2021). Another finding of this report is that the adoption of Scrum teams has increased among enterprises from 40% to 66% in the last years (Knaster, 2021). The reason behind the rapid increase of the Agile mindset and the Scrum teams’ adoption among large enterprises has to do with the flexibility these methodologies offer in managing projects (Layton, 2015).

Due to this wide adoption, researchers started to explore the enablers and inhibitors that could hinder or improve Scrum adoption. As a result, a number of enablers and inhibitors were pointed out and studied. According to Muller (2014), self-managing teams (SMTs) are the core of the Agile methodology which makes the literature on SMTs also applicable for Agile and Scrum adoption. Building on the findings of Muller, Magpili and Pazos (2018) categorized the factors that influence the performance and successful implementation of such teams in three levels, namely, individual, team, and organization level (Magpili & Pazos, 2018). Other researchers like Dikert et al. (2016) focused on the enablers and inhibitors that could affect the adoption of the SMTs and Scrum teams. According to Dikert et al. (2016) *strong commitment to change* is an example of an enabler for Scrum adoption, while *not sharing the same working method in the organization* is an example of a factor that can inhibit the adoption. By combining the ideas of Magpili and Pazos (2018) about the three levels of Agile implementation with Dikert et al.’s (2016) ideas regarding the enablers and inhibitors, a matrix is developed for this research. As will be elaborated in the next section, in this self-made

matrix there are three levels, within each level, several enablers and inhibitors were found to affect the Scrum adoption.

Despite the rich literature on Scrum teams and the enablers and inhibitors of the adoption of Scrum teams, most findings from the studies are built on the Scrum Adoption in large organizations. Few to almost no research on Scrum teams' adoption in SMEs was found. Yet, there are many intrinsic differences between SMEs and big organizations, which can remarkably affect Scrum adoption (Hanslo & Mnkandla, 2018). For instance, according to Carrier (1994), large organizations and SMEs are different in terms of structural context, relationship forms, and their communication style. Hanslo and Mnkandla (2018) have also noted that communication in big organizations has more complex channels, their managing style is more hierarchical, and the relationships within the company are mainly task based. In contrast to large organizations, SMEs are less hierarchical, employees have shorter communication channels with their managers and with each other which results in stronger relationships. These differences in management style, communication, and relationships could affect the enablers and inhibitors of Scrum adoption in SMEs (Hanslo & Mnkandla, 2018).

Hence, this research aims to enrich and extend the current literature on Scrum adoption in SMEs with a qualitative study that focuses on pointing out the differences and similarities between large organizations and SMEs regarding the enablers and inhibitors of Scrum teams' adoption. To research the above-mentioned points, this paper will answer the following research question:

How do SMEs differ from large organizations in terms of enablers and inhibitors of Scrum teams' adoption?

Consequently, the following two sub questions will first be answered:

Sub-RQ 1: What are the enablers that could assist Scrum teams' adoption in SMEs?

Sub-RQ2: What are the inhibitors that could hinder Scrum teams' adoption in SMEs?

By addressing the above (sub) research questions, this thesis contributes to the literature on Agile by illuminating the enablers and inhibitors of Scrum teams' adoption in SMEs. In the current literature, many studies have been conducted that point out the enablers and

inhibitors of Scrum teams' adoption in large organizations (Dikert et al., 2016). However, much less is known on the enablers and inhibitors of Scrum teams' adoption in SMEs. By not filling this gap in the literature, chances exist that some future researchers will accidentally use the data from the literature in the context of SMEs. By doing that, future researchers will be risking the validity and reliability of their findings as it may not be completely applicable for SMEs. To reduce this chance, the findings from these research questions will be compared with the enablers and inhibitors that are found in the literature and are related to large organizations. By doing this comparison, other researchers will be able to see which enablers and inhibitors are common in the Scrum teams' adoption in both large organizations and SMEs and which ones are only applicable to large organizations or SMEs.

This thesis also contributes to practice. Managers can benefit from the results of this paper in multiple ways. First, SMEs' owners and managers can prepare themselves for the enablers and inhibitors that could support and hinder the Scrum teams' implementation. Second, this paper will provide guidelines for SMEs' managers on how to smoothly implement Scrum in their enterprise, which can save them time and effort when they want to implement Scrum.

This research will have the following structure: in the theoretical framework section, the related theories and models will be stated and analyzed, such as the Waterfall model and the Scrum continuous learning/development cycle. In the same section, the literature will be analyzed to point out the enablers and inhibitors of Scrum adoption in large firms as they form the base of the comparison in this research. In the methodology section the research design, research instrument, data collection, data sampling, and data analysis will be described. In the fourth section, the results from the collected data will be stated. In the fifth section, the results from the data will be discussed and compared with the findings from the literature framework, the practical implications will be mentioned, the limitations and future research will be explained and finally a short conclusion.

2. Theoretical framework

In this chapter, the theoretical background is presented to give a better understanding of the concepts and theories used in this paper. In the first paragraph, the Agile methodology will be explained. This will be followed by a paragraph on Scrum and Scrum teams. In the third paragraph Agile adoption will be discussed to ensure a smoother switch to the final paragraph in this section, namely, the enablers and inhibitors of Scrum adoption in large organizations.

2.1 Agile methodology

Agile is a concept that describes a way of thinking, working, and organizing (Layton, 2015). The Agile working methodology is a mindset which makes enterprises easier to manage, more flexible, more viable, and more efficient (Dyba & Dingsoyr, 2009). According to Gustavsson (2016), Agile companies can break projects into smaller ones which makes project management much easier. Hence, the Agile teams will act in a more proactive way to the problems, wishes, and demands of their customers. Fronza et al. (2019), state that Agile enterprises will have a better productivity compared to the enterprises that are not Agile. The reason behind this statement is that Agile enterprises work with shorter sprints (usually from one to four weeks), which makes projects more manageable, less sensitive to changes, and adjustments could be applied in any stage of the process. By having these qualities, Agile enterprises will be able to produce more projects in a shorter period of time (Fronza et al., 2019).

Another benefit of the Agile working methodology is developing projects of better quality. According to Rigby, Sutherland, and Takeuchi (2016), the Agile methodology delivers a more interactive way of working compared to the traditional way of managing projects. Due to this quality, Agile enterprises are more efficient in discovering, detecting, and solving issues that could occur during projects. Because of this efficiency, Agile enterprises are able to deliver work with a better quality. Rigby, Sutherland, and Takeuchi (2016) added another benefit of the Agile working methodology, namely, a higher customer satisfaction. They argue that when enterprises are Agile the customers will be able to observe and supervise the process of their projects, provide feedback, ask for clarity in case something is not clear, and ask for adjustments if the demands of the environment are changed. Rigby, Sutherland, and Takeuchi

(2016), argued that Agile enterprises will enjoy more customer satisfaction when they have these abilities and insights into the process of their own projects.

In order to align the Agile thinking methodology, several frameworks have been developed that could help the process of implementing Agile (Shastri, Hoda, & Amor, 2021). Despite that there are several frameworks developed for Agile, Scrum remains the most adopted framework around the world (Shastri, Hoda, & Amor, 2021). The following paragraph goes in depth in Scrum and Scrum teams.

2.2 Scrum and Scrum teams

As mentioned in the previous paragraph, Agile is a mindset that focusses mainly on flexibility, efficacy, and productivity (Dyba & Dingsoyr, 2009). Within Agile and the Agile-family, there are more than 40 frameworks developed with the intention of enterprises to become Agile and having the Agile mindset (Hoda, Noble, & Marshall, 2010). From the various frameworks that are developed, three frameworks became the most adopted ones around the world, namely, XP, Kanban, and Scrum. Studies have found that 58% of large organizations are currently using Scrum as a standalone method for their projects and in over 76% Scrum is used in combination with other methods. Kanban comes second with 7% while XP was found to be used in only 1% of large organizations (Shastri, Hoda, & Amor, 2021). The XP framework stands for Extreme Programming and is used to support development practices, while the Scrum and Kanban frameworks are used to manage and guide projects (Hoda, Noble, & Marshall, 2010).

According to Layton (2015), the Scrum-metaphor is used for the first time in an article in the Harvard Business Review magazine published in January 1986 called “The New New Product Development Game”. The word Scrum refers to a game moment in Rugby (American football). In this moment, both teams are fighting for the ball. This moment encourages all the team players to work and to take the responsibility together in order to accomplish the mission, which is winning the game. Like in the game of Rugby, Scrum teams work together on delivering a potentially usable product in every sprint. The duration of each sprint inside the Scrum framework is on average between one to four weeks. In some situations, the sprints could take up to several months (Hoda, Noble, & Marshall, 2010).

According to Tihlarik and Sauer (2021), there are three roles inside the Scrum teams, namely, the product owner, Scrum master, and developers. The product owner is the representative

for the product for internal and external clients. Besides that, the product owner is also responsible for clarifying and monitoring the priorities in the project. The Scrum master is responsible for motivating the team members and supervising the process. Another task of the Scrum master is removing the blockages that hinder the process to optimize the working process. Developers are the other team members that work together to ensure that by the end of each sprint a product is developed (Tihlarik & Sauer, 2021).

Nowadays, Scrum teams are becoming popular in large organizations (Stray, Fægri, & Moe, 2016). The reason for this popularity among large companies is that they are usually hard to manage, especially when these organizations have complex processes and are operating in different countries (Rigby, Sutherland, & Noble, 2018). According to Younus and Abdumandil (2021), large organizations around the world are adopting Agile and Scrum teams in their development projects for several reasons. Examples of these reasons are: being more flexible with changes in their environment, being able to break down tasks into smaller ones, having more visibility on the development process, having better coordination and communication between the organization and the client, having fewer risks in the development process, and having lower costs of production.

2.3 Agile adoption

According to Bomarius et al. (2009) before the adoption of the Agile methodology, enterprises were (some still are) working according to traditional methodology of managing project, namely, the Waterfall technique. According to this technique, managing projects begins with clarifying and understanding the goals of the project, then developing a design or a working plan to achieve the objectives of the project. When the requirements are identified and the system design is built, the third step in the Waterfall model begins, namely, executing the project. When the implementation of the project is done and before it is delivered to the clients, the project goes to the testing phase to check whether there are problems with the project that should be solved before the delivery to clients. When the check phase is done, the project should be ready to be used by clients. When all stages are done and the project is working, the maintenance stage remains active in order to prevent upcoming problems and to solve issues in the project (McMachin & Heffernan, 2020). [Figure 1](#) shows the stages in the Waterfall model.

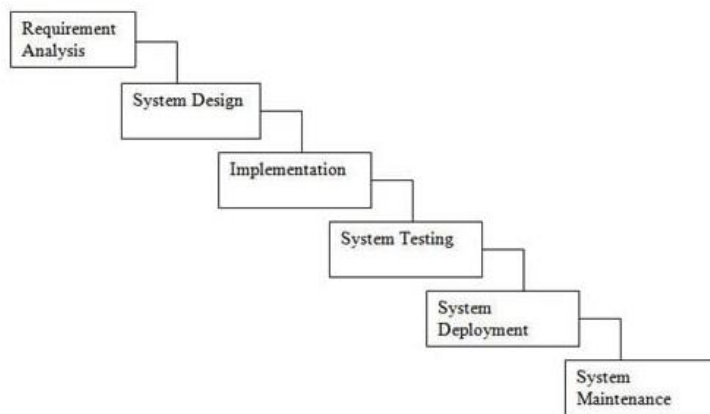


Figure 1 Waterfall model (Softwaretestinghelp, 2021).

Despite the wide Adoption of the Waterfall technique, several problems have been reported related to this model. The most common problem is that this way of working cannot keep up with the changes in the environment. The reason behind that is that problems and the new needs of the environment are (usually) detected in later stages in the process which makes making adjustments more difficult as the project had already started. Another problem is that the steps within the Waterfall model go in one direction which makes it difficult to make adjustments in the project if these are not mentioned in the first design (Bomarius, Ovio, Jaring, & Abrahamsson, 2009).

Moe, Dingsoyr and Dyba (2010) noted that, with the increase in the complexity of the projects and the rapid changing demands of the environment, it has become almost impossible to keep up with these changes and demands while working according to the Waterfall model. For this reason, enterprises started looking for another way of working that enables them to not only identify the needs of the environment in early stages, but also to be flexible and less sensitive to changes during projects developments (Moe, Dingsoyr, & Dyba, 2010). For this reason and because of the ease and flexibility of the Agile mindset, large enterprises began to switch to the Agile methodology and started implementing Scrum teams for managing their projects (Duka, 2013).

2.4 A multilevel framework of enablers and inhibitors of Scrum adoption

Scrum teams have become popular among large enterprises due to the cycle of their project management style (Hasan, Khan, and Rehman, 2021). In comparison to the traditional Waterfall cycle, Scrum teams follow continuous learning/development cycles, while the

Waterfall cycle consists of stair-like steps which makes going back to previous steps difficult. Srivastava, Bhardwaj, and Saraswat (2017) noted that Scrum teams' management style made enterprises able to make and introduce changes in all stages of the project, not only in the first stage. These authors also reported that 95% of the of the enterprises that are currently working with Scrum and Scrum teams are planning on working with it for a long period of time (Srivastava, Bhardwaj, & Saraswat, 2017). [Figure 2](#) shows the working cycle of each sprint within the Scrum framework.

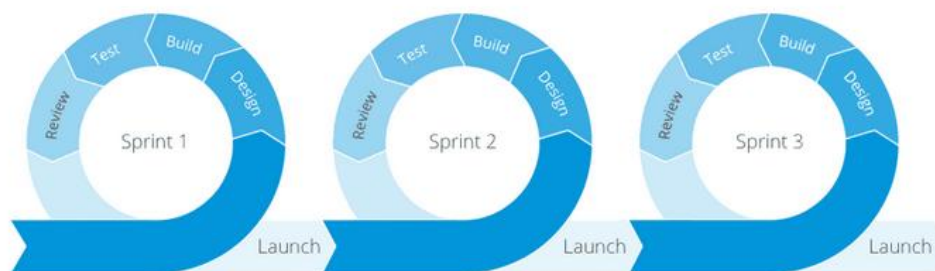


Figure 2 Agile/Scrum framework. Source: (Gavrilova, 2019).

As a result of the wide adoption of Scrum and Scrum teams in large organizations, researchers started exploring how such novel team-based organizational structure could be implemented in large organizations, that also meant to identify those enablers and inhibitors that could boost or hinder Scrum teams' adoption.

When Scrum and Scrum teams were developed, they were meant to be used by small teams in small enterprises (Dikert et al., 2016). However, when large enterprises noticed the ease in use and flexibility in managing projects that these frameworks provide, a large-scale transformation to Scrum framework and Scrum teams started among large enterprises (Conboy & Carroll, 2019). According to Dikert et al. (2016), the adoption of Scrum teams could be affected by several factors. These factors could be divided into two categories, namely, enablers and inhibitors. Where enablers refer to the factors that support the adoption, the inhibitors to the factors that hinder it (Dikert et al., 2016).

As mentioned before, SMTs are the core of the Agile methodology (Muller, 2014). Building on this point, Magpili and Pazos (2018), divided the factors that could affect the implementation of SMTs into three levels, namely, individual level, team level, and organization level. By using both findings of Dikert et al and Magpili & Pezos, a matrix of the enablers and inhibitors with

respect to the three levels will form the backbone of this theoretical framework. The following paragraphs will further discuss the enablers and inhibitors according to their level. [Table 1](#) shows an overview of the enablers and inhibitors in the three levels.

Table 1 Overview Enablers and Inhibitors

	Individual level	Team level	Organization level
Enablers	<i>Strong commitment to change/ Suitable training/ Continually coaching</i>	<i>Teams are allowed to self-organize/ Include individual with experience/ Team shares culture</i>	<i>Management support/ Management and teams following the same workstyle</i>
Inhibitors	<i>Resistance to change/ Lack of training/ High workload</i>	<i>Difficult communication among and between teams/ Different skills level in teams</i>	<i>Inefficient communication/ Management in Waterfall mode while teams are Agile/ departments are not willing to change</i>

2.4.1 Individual-level

2.4.1.1 Enablers

Dikert et al. (2016) underlined that enterprises that showed a strong *commitment* of their individuals to the change scored higher in the adoption of the Scrum framework and Scrum teams. This commitment was a very important factor in this adoption, especially in the first stages of the transformation. The reason behind this is that the first stages of the transformation are usually associated with problems and difficulties that could put the transformation to test. These problems and difficulties could be solved by a strong commitment of the individuals. Ghani, Zulzalil, and Gandomani (2014) mentioned, also in early research, the importance of individual commitment to the Agile mindset and Scrum framework as one of the most important factors that enables the transformation to Scrum and Scrum teams. Beside strong commitment, empirical research of Lindvall et al. (2002) found that a sufficient number of *trainings* on Agile mindset and the Scrum framework showed an increase in the adoption of Scrum in large organizations. The first stages of the transformation led to many questions and uncertainties across employees. By offering suitable trainings, employees were able to build the needed knowledge, which resulted in a

better acceptance to the new adoption. Finally, as individuals are not all the same, some individuals will not be able to keep up with the adoption of the Scrum framework. According to Neumann and Baumann (2021), individuals that were not able to keep up with the Scrum adoption felt lost in the process and that demotivated them to accept the adoption. Therefore, facilitating regular *coaching sessions* recharged the motivation of these individuals and made them accept the Scrum adoption.

2.4.1.2 Inhibitors

According to a prior study of Magpili and Pazos (2018), *resistance to change* was found as a common behavior among employees when the SMTs were introduced (and this may be also applicable to the introduction of any new working methodology). The reason behind this resistance could be the fear of the unknown, lack of experience, and lack of job security. Beside resistance to change, Magpili and Pazos (2018), reported *lack of training* as one of the factors that inhibited the adoption of new working method. Magpili and Pazos argue that trainings are the key to solving problems and issues that could come along with the new working methodology. When a sufficient training is lacking, individuals that are not familiar with the new methodology will be less motivated to be part of the new implementation (Lee, 2012). Finally, adapting the Scrum framework requires a lot of *learning and practices* (Hron & Obwegeser, 2018). According to Lilja, Kailanto, & Saanila-Sotamaa (2021), enterprises with individuals with *high workload* were shown to be less motivated to the new adoption. The reason for that is because busy employees have to choose between less time for their usual tasks or including these learnings and practices to their busy agenda, which will result in less motivated employees.

2.4.2 Team-level

2.4.2.1 Enablers

As having self-managing teams (SMT's) is the main characteristic of the Agile mindset (Layton, 2015; Muller, 2014), giving teams the *opportunity to monitor and manage their own performance* has been found to stimulate team members to feel more responsible for meeting their own goals. Hence, team members may feel like they became the bosses of themselves which can boost their acceptance to the new transformation (Laureani, 2021). Beside the ability to self-organize, Dikert et al. (2016), found that including *individuals with experience* in Scrum in teams at the beginning of the Scrum adoption increases the acceptance of the team

members. Because the experienced members were able to accomplish the needed tasks, unexperienced members were able to take more time in the learning process, which resulted in more acceptance. Finally, according to Smite, Moe, and Gonzalez-Huerta (2021); Franken, van Dun and Wilderom (2021), the adoption for new transformations will be increased when team members *share the same norms and values*. The reason behind this finding is that when team members are from the same culture (beliefs, norms, and values), more harmony and fewer differences will occur between the team members, which will result in a better acceptance and adoption for changes.

2.4.2.2 Inhibitors

Research has shown that *unclear communication* among and between teams can be an inhibitor that hinders the adoption of Scrum teams in large organizations (Mohamed and Yang, 2021). The weakness of communication between and within teams was mostly caused by several factors, like, language barriers, poor team feeling, generation differences, cultural differences, and time zone differences in case of multi- countries teams. Beside difficulties in communication, according to Khanagha et al. (2021), *differences in skill levels* have shown a negative effect on the adoption of new changes in the current working style among less skilled employees. A similar result was found by Venkatesh et al. (2020), which concluded that large differences in the skills level of the same team members is negatively associated with their acceptance and adoption for any changes in general and for Agile mindset and Scrum framework in particular.

2.4.3 Organization-level

2.4.3.1 Enablers

According to several researches, *management support* is one of the most important enablers for a successful adoption for Agile mindset and Scrum framework (Dikert et al., 2016; Khoza & Marnewick, 2021). This research argued that in enterprises where managers were willing to adopt the new working methodology and invested more in trainings and coaching sessions, a better and smoother adoption among employees to Scrum was found. Beside management support, Chow and Cao (2008) found that one of the success factors for the adoption of the Agile mindset and Scrum framework is that *managers and employees have the same workstyle* and believe in the importance and the added value of Scrum teams.

2.4.3.2 Inhibitors

According to Setiawan and Sujono (2021), *inefficient communication* has been found as one of the most important failure factors in Scrum adoption in large organizations. The reason behind that is because when large organizations are switching to a new working methodology, a lot of communication will take place in order to ensure that all the employees are aware of and understand the new methodology. When the communication is done inadequately, the possibility exists that some managers and employees will not have a clear idea about their role in this transformation, hence, less adoption acceptance will be shown among managers and employees. Beside inefficient communication, according to Dikert et al. (2016), the *difference between the management style and teams' style* is found to inhibit the Agile and Scrum adoption within large organizations. According to this study, managers, in some cases, keep work according to the traditional waterfall model, while the teams work with the Scrum framework. By having two different styles of working, management can begin to lose trust in Scrum framework which leads to less Scrum adoption among managers. Finally, researchers found that in order to have an effective Scrum adoption, *all the departments of enterprises should be involved* (Layton, 2015). In this regard, researchers found that in some cases not all the departments/functions are able and/or willing to adopt the Scrum framework. This unwillingness/inability has to do with flexibility of the tasks that those departments execute. Examples of departments that are found to easily adopt the Scrum framework are sales and marketing, while documentation and finance are found less motivated to adopt the new working methodology (Dikert et al., 2016).

As mentioned before, all the pointed-out enablers and inhibitors are derived from studies that were based on Scrum teams' adoption in large organizations. According to Carrier (1994), large organizations and SMEs are different in many contexts, like, the structural context, relationship forms, and communication context. These differences between large organizations and SMEs may influence the enablers and inhibitors related to adoption of Scrum teams in SMEs (Hanslo & Mnkandla, 2018). For this reason, the following paragraph will mainly focus on what is available in the literature regarding the adoption of Scrum teams in SMEs.

2.5 Adoption of Scrum teams in SMEs

SMEs are companies or businesses that have assets, revenue, or a number of employees below a certain level. These numbers are different from country to country. Even in the same country, these levels are different in every industry and branch (Ward, 2020). According to Schmiemann (2008), SMEs in the European Union consist of businesses that have fewer than 250 employees, while SMEs in America can consist of up to 1200 employees. According to Hanslo and Mnkandla (2018), SMEs are less hierarchical than large organizations due to their smaller size. By having a less hierarchical structure, the employees of SMEs can communicate more easily with their managers and with each other. This results in stronger relationships in the company (Hanslo & Mnkandla, 2018).

As before mentioned, when Scrum and Scrum teams were developed, SMEs were meant to be their target group as they consist of teams that are operating with a small number of people (Conboy & Carroll, 2019). However, when large organizations started adopting Scrum and Scrum teams, researchers' focus also turned towards the implementation of Scrum in large organizations. According to Žužek et al. (2020) and Gregory, Rutherford, Oswald, & Gardiner (2019), researchers were more interested in studying Scrum in large organizations for several reasons, for instance, the availability of data and the ease of monitoring the Scrum adoption, which is most likely not the case in SMEs. Therefore, the current literature on Scrum adoption is to a large extent based on research done in large organizations which makes it not suitable for SMEs as they differ from large organizations in size, structure, and communication (Carrier, 1994).

To fill in this gap in the literature, this research will focus on the factors that can boost or hinder Scrum adoption in SMEs. After doing so, the found enablers and inhibitors will be compared with the ones currently known from the literature. This will ultimately allow reaching a comprehensive understanding of agile adoption in small and large organizations.

In the following chapter, the methodology of this thesis is presented to explain how the research objectives can be obtained.

3. Methodology

3.1 Research Design

The purpose of this study is to compare the enablers and inhibitors of Scrum adoption in SMEs with the enablers and inhibitors of Scrum adoption in large organizations to see which enablers and inhibitors are applicable only for SMEs. Since the literature is still lacking information about the topic of this research, qualitative research was conducted to go beyond the currently available information and better understand the phenomenon (Saunders, Lewis, & Thornhill, 2009).

This research focused on pointing out the enablers and inhibitors of Scrum adoption based on data from three divisions of one SME. To do that, the Qualitative Embedded Case Analysis is used. The reason that made this research design appropriate for this research is because the three divisions were different in terms of their Scrum adoption and that provided different perspectives (Yazan, 2015). Based on this research design semi-structured interviews were selected as a data collection strategy. Taking into account that the three divisions are not all working with Scrum, two different questionnaires were used (See [Appendix 1](#)). This research design has its advantages and disadvantages. An advantage of this method is that it provides many insights and in-depth information about the subject of this research (Stutterheim & Ratcliffe, 2021). One of the disadvantages is that this method tends to be time-consuming. For example, the preparation for the interviews, conducting the interviews, and analyzing the collected data. For this qualitative research, the abductive approach was opted for. The objective of this approach was to build up on existing knowledge, rather than validating the already generalized assumptions or building entirely new theories (Dubois & Gadde, 2002). In contrast to deductive and inductive way of reasoning, the abductive approach uses the prior knowledge on a subject only to build a better understanding about the subject (Gioia, Corley, & Hamilton, 2013; Ketokivi & Choi, 2014). By using this approach, the already generalized literature on the enablers and inhibitors in Scrum adoption in large organizations was tested and adjusted to suit SMEs.

3.2 Sampling technique and sample characteristics

This research was conducted at company Phoenix which can be considered as the sample group. Phoenix is an SME and a software company that develops, implements, and maintains

integrated business software. Phoenix has an employee count of around 45 employees. This company is a combination of one partner and two micro enterprises, namely, companies Adonis, Zeus, and Athena. Company Adonis is partner of Company Phoenix and is responsible for developing and maintaining apps for B2B and B2C web shops. Company Zeus is the producer and supplier for the Zeus application, which is an Enterprise Resource Planning (ERP) software for technical wholesalers. Company Athena is the producer and supplier for ERP software for service organizations.

It is worth mentioning that these three divisions are all Agile, however, not all three divisions are currently working with Scrum. While Athena has been successfully working with Scrum for almost one and a half year, Adonis and Zeus are currently working with Kanban Board. The reason behind the selection of these three companies was to see which enablers the three companies find to support the adoption of Scrum teams and which inhibitors hindered the adoption in company Athena and prevented the Scrum adoption in Zeus and Adonis. As before mentioned, the three divisions are engaged with different types of work and different expectations of customers. These differences might also have impacted which type of organizational approach is the most effective approach for managing projects in a specific division.

From the planned interviews, at least four interviews were conducted from each division. The selection process followed the purposive sampling method. According to Saunders, Lewis, & Thornhill (2009) the purposive sampling is a non-probability sampling method. Meaning that the researcher uses his own judgement in selecting the participants according to their added value for his research. The selection of the participants could be a heterogeneous selection where a maximum variation is wanted or a homogeneous selection where maximum similarities are wanted. This research aimed for a heterogeneous selection as participants have different roles (see [Table 2](#) for details). Beside the criterion of including participants from different roles, this research included two managers/owners of two divisions and the product owner of the third division as they may have more information about their divisions.

The demographic information of the participants was as followed: 100% of the participants were male and Dutch. The average age of the participants from Adonis was 23 years, Athena 45,5 years and Zeus 51. Regarding the educational level of the participants, 25% has a Master's degree, 25% has a Bachelor's degree, 25% ROC and 25% HTS. This demographic information

is not very precise as a part of the participants did not fill the questionnaire related to the demographic information. Below, in [Table 2](#), the pseudo names of the participants with their roles are stated. This is to prevent the results section from getting crowded by functions.

Table 2 Participant's information

Name	Role
Jan (Company Zeus)	Product owner and manager of Zeus/Director of R&D in Phoenix/ Director owner of Phoenix
Wouter (Company Zeus)	Automated testing and documentation
Hans (Company Zeus)	Software Developer
Harm (Company Zeus)	Software Developer
Mart (Company Adonis)	Contact person with customers
Jurre (Company Adonis)	Software developer
Willem (Company Adonis)	Project manager
Rutger (Company Adonis)	Owner of Adonis and shareholder of Phoenix
Rico (Company Athena)	Consultant/tester
Jorick (Company Athena)	Software developer
Kai (Company Athena)	Product owner/planner
Karel (Company Athena)	Programmer

3.3 Research Instrument

Semi-structured interviews with open-ended questions were conducted. This allows following a structure that is roughly the same which makes exploring the thoughts and beliefs of the participants more convenient (DeJonckheere & Vaughn, 2019). Also, using semi-structured interviews gives the participants the ability to add information that the interviewer might have forgotten to add in the questions (Flick, von Kardorff, & Steinke, 2004). Hence, semi-structured interviews provide freedom to prompt other questions to gather other information in a more indirect way so that each question and answer can be tailored to participants' topics of discussion. One of the disadvantages of semi-structured interviews is that the respondents sometimes may lose focus and start mentioning points that can be unrelated to the research.

If this happens, the interviewer can monitor when the interviewees take another direction and bring the focus of the respondents back to the main research (Flick, von Kardorff, & Steinke, 2004).

In this research, 12 interviews were conducted with employees from different roles, which represented approximately 25% of the total employees in the three divisions combined. Before conducting the interviews with the employees from our sample, two pilot interviews were conducted to test the questionnaires and the guide of the interview. The first pilot interview was with an employee working in a big bank which is currently using Scrum for managing its projects. The second pilot interview was with an employee working for the Dutch government which is not working with Scrum. The respondents of the pilot interviews were asked how they experienced the interviews and how the interview guide could be improved. The two respondents of the pilot interviews gave feedback on how to make the questionnaire less formal and suggested to use more ice-breaking questions, such as asking about the day of the participant and about their plans for Christmas vacation in order to make the respondent feel more comfortable before starting the interview. After processing the feedback of the respondents of the pilot interviews, the interviews with the employees from the sample company took place. The interviews were divided into three topics, namely, questions about general information or icebreakers, questions only related to enablers of Scrum adoption and questions only related to inhibitors of Scrum adoption. The question protocol can be found in [Appendix 1](#).

Due to the Covid-19 regulations, the interviews were conducted online. During the interviews the participants were asked to sit in a quiet place where no one could be disturbed by other colleagues, clients, or by other environmental factors. To ensure that the questions would be fully understood by the participants, all the interviews were conducted in Dutch. Regarding privacy, the names of the interviewees and companies were anonymized, and pseudo names were used in the text to protect the interviewees' identity. Before the interviews, the respondents were asked for their permission to record the interview. To ensure that no questions would go beyond the scope of this research, the questionnaire of the interviews was checked by experts beforehand.

After conducting the interviews, the recordings were transcribed, and the relevant information and quotes were translated to English by the author himself, who is proficient in

English. To ensure that no information was missed or lost in the translation process, all participants received their quotes for approval.

3.4 Data Analysis

After transcribing the interview data, the data were analyzed via Thematic Analysis (Braun & Clarke, 2006). This method, which identifies and analyzes data in order to find patterns between data, followed six steps. The first step was an observation step as the collected data was first relistened to, transcribed and reread to get familiar with it (Braun & Clarke, 2006). The second step was creating codes which were based on similarities and patterns in the collected data and that corresponded with the so called “1st-order concepts” (see [Appendix 2](#)) from Gioia et al. (2013). After collecting these concepts, the third step of Thematic Analysis was started. In this step, themes were created to merge the concepts in order to generate more meaningful findings (Braun & Clarke, 2006). After doing that, these themes were put together in the so-called “2nd-order themes”. When these themes were created and merged with similar 2nd-order themes, aggregated dimensions were created and corresponded to “3rd-order themes” as per Gioia et al.’s methodology (Gioia, Corley, & Hamilton, 2013). During the fourth step of Thematic Analysis, all themes were reviewed to check if their relation to the codes and to the data as a whole was not biased (Braun & Clarke, 2006). The fifth step consisted of giving these themes names. As the adductive approach was used, some of the themes, especially the 2nd and 3rd order themes, were driven by the literature that was reviewed. The final step started with building the data structure of the report by analyzing and using the right information from the respondents to answer the research question of this research (Braun & Clarke, 2006).

4. Results

In what follows now, first the enablers for Scrum adoption in SMEs will be reported according to their level, followed by the inhibitors of Scrum adoption, again organized according to their level. Whilst [Figure 3](#) depicts the data structure according to Gioia et al.'s (2012) methodology, further exemplary quotes can be found in [Appendix 2](#).

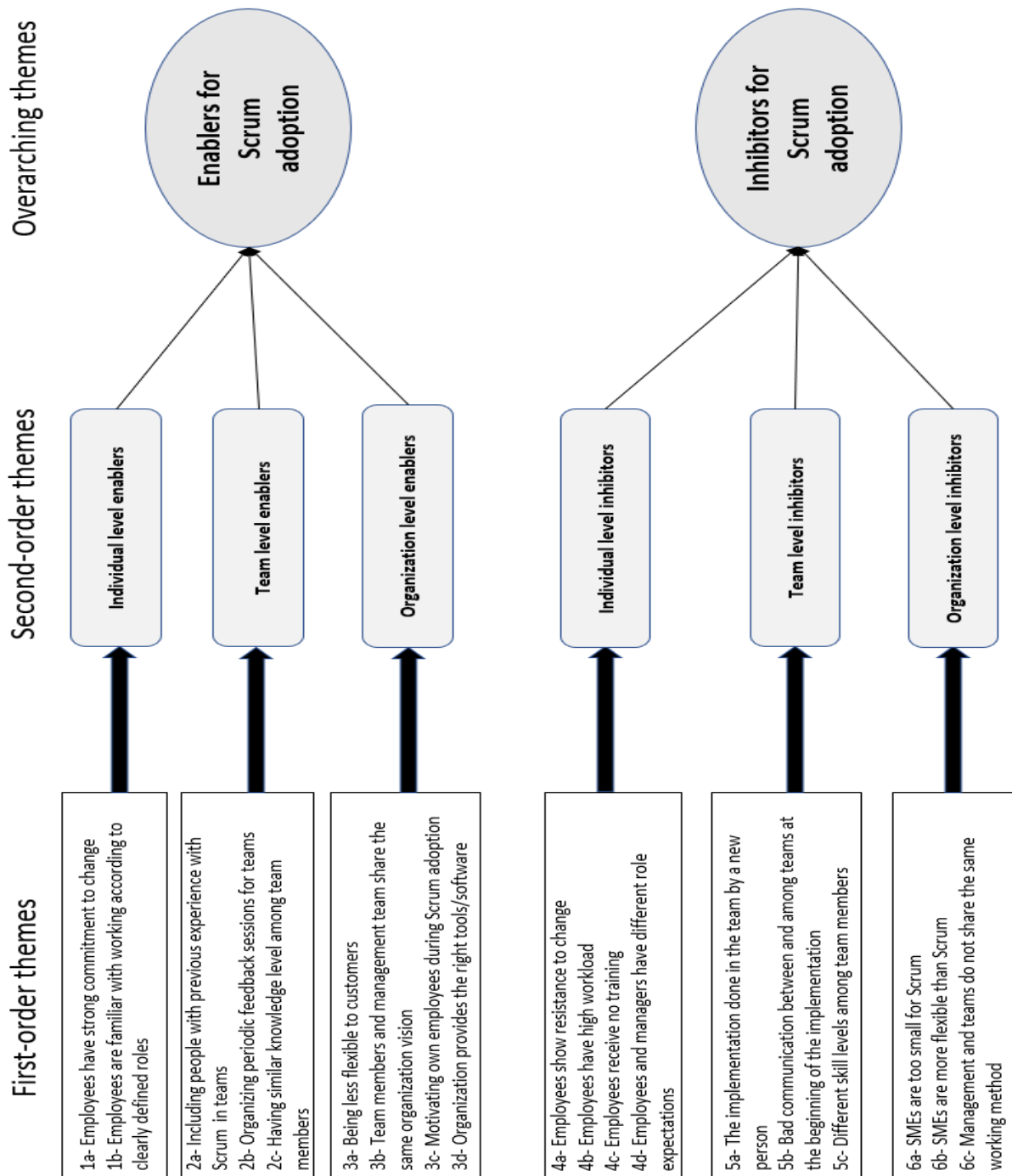


Figure 3 Data structure

4.1 Enablers

4.1.1 Individual level

The majority of the participants in this research emphasized strong commitment to change as one of the key factors that could support the Scrum adoption in SMEs. They underlined that the implementation of Scrum is easier if the person involved in the process is also committed to the implementation. Being strongly committed means that the person believes that the new working methodology will improve the work and will enhance the work quality. Jan illustrated this factor as follows: *“If everyone is committed to the change and if we all agree on the added value of Scrum, then the implementation will become easier”*.

Another individual-level enabler that many participants noted is having prior experience with working according to clearly defined roles. According to several interviewees, the first stage in the implementation process is usually the hardest because not everyone is used to working with defined roles, which is essential for Scrum. This might cause individuals getting lost in the implementation process and may eventually result in a less effective implementation. Wouter noted: *“To ensure a good implementation, every person should have a clear role in Scrum teams. The first stage of the implementation is usually the hardest because there are many uncertainties, and this is why roles should be defined clearly to prevent team members from getting lost in the process”*.

4.1.2 Team level

Including people with previous experience with Scrum is found as an important factor for a good Scrum adoption by many participants. Interviewees mentioned that during the first stages of the implementation process team members tend to have many questions and uncertainties. By having a person with previous experience with Scrum, team members feel less scared from the uncertainties that could come along with implementing new working methodology. Team members could get frustrated and become less motivated when they face problems during the implementation process. Hence, the presence of a person to whom they can ask questions in case they did not understand or in case something happened not the way they expected may help team members to feel less anxious and this can enhance the implementation process. Regarding this factor Karel stated: *“Having a person with previous experience in Scrum is very important in the implementation process. At the beginning we had*

a lot of questions, like, how can we do this and that, what will happen if this happens, this is not working what should I do etc., so having someone who can answer these questions is very important. I really do not know how we could have implemented the Scrum framework without Kai”.

Regarding a good Scrum implementation, several participants mentioned the importance of organizing periodic feedback sessions. Scrum implementation is an ongoing process and having periodic feedback sessions with team members can help to reflect on the things that are going well and the things that are not going as expected. According to the participants, these feedback sessions are thus beneficial in monitoring the implementation process step by step and adjusting accordingly. On this point Kai elaborated: *“Periodic feedback sessions are very important in the implementation process. We had a daily standup and we have feedback sessions after every sprint. In these sessions we look together at how things are going, what can be done better and how we can do it better”.*

Whilst feedback was acknowledged as crucial almost unanimously, only a few participants mentioned having a similar knowledge level in the team as an enabler for Scrum adoption. Participants noted that if the differences in knowledge levels between team members are big, the ones with a broader knowledge will be pointed out more frequently for doing the difficult tasks. By having a similar knowledge level all team members will be pointed out equally and that will enhance not only the implementation process, but also the learning process. On this point Harm said: *“I think that when all team members have the same technical knowledge level, the implementation of Scrum will be more useful. If you have a lot of differences in the knowledge level, the one person with a broad knowledge will most often be appointed to do the harder tasks within a sprint to get this sprint done within the same set of time”.*

4.1.3 Organization level

Quite surprisingly, according to some participants, being less flexible to customers could enhance the implementation process of Scrum in organizations. This is because when companies are very flexible, meeting the numerous deadlines required by Scrum might become an issue. For this reason, participants emphasized the importance of having the right balance between being flexible and having some restrictions in terms of handling customers’

requests. They underlined, for instance, that meeting the sprint deadlines is very important during the implementation process because this teaches the organization how it should work according to specific time slots. On this point Jurre noted: *“I think that you will find this point weird, but being very flexible is not a good thing for Scrum adoption. Sometimes you have to be strict to customers because they want that their work or request will be immediately picked up and this is totally understandable. If you do that you will never be able to have the work done by the end of each sprint”*.

Furthermore, many participants mentioned that when team members and the management team in the same organization share the same vision regarding Scrum, the implementation tends to be easier. According to these interviewees, when team members and the management team share the same organizational vision, on the one hand, the management team provides all needed support to ensure a good Scrum implementation; on the other hand, all team members will be more positive and open for adopting Scrum. On this point Willem emphasized: *“It is very important that managers and team members share the same vision regarding Scrum to ensure a good implementation”*.

Motivating team members is also seen by few participants as an enabler for Scrum adoption. According to these participants, implementing a new working methodology in the organization could be seen as unusual or scary for many members. The reason behind this fear could be caused by the uncertainties that can come along with doing things in a new way. Motivating the employees that the new working methodology is meant to help them do their work in an easier and better way will increase their involvement in the implementation process. On this point Mart mentioned: *“People could be unsure or scared of implementing a new working methodology instead of the one they are used to. By motivating them that the new way of working will help them in doing their work in a better way, and that they will not be left alone in the implementation process”*.

Having the right tools in the organization is also seen as one of the enabling factors for a good Scrum implementation since, as several participants highlighted, having the right tools is having half of the work done. According to them, Scrum is a framework, and this framework needs a proper software that can make the implementation easier. Having a software with a clear structure is essential for a good implementation especially in the beginning stage of the implementation. On this factor Kai noted by saying: *“Having the right tools is having half of*

the work done. For a good implementation you will need good tools that can help you in the implementation process”.

4.2 Inhibitors

4.2.1 Individual level

Employees’ resistance to change was found by many participants as one of the most important factors that could hinder the implementation of Scrum in SMEs. Participants stated that resistance to change could be an issue especially at the beginning of Scrum adoption. Individuals who do not see the necessity of adopting a new working methodology are the ones that are expected to be more problematic. On this point Jan illustrated: *“Resistance to change is for sure one of the most important factors that could hinder the implementation of Scrum. People will probably think: why should we change our working methodology while everything is going well?”.*

Having high workload is also seen by many participants as an issue for the Scrum adoption. According to these participants, implementing a new working methodology needs to be accompanied with receiving trainings and information sessions. When individuals have a high workload, they may have less time and energy to attend these sessions, and this may eventually result in a less efficient Scrum implementation. On this point Jorick noted: *“In my eyes, having high workload is not beneficial for a good Scrum implementation. I think this way of working will be new for a lot of people. With that being said, employees will need explanation sessions on how Scrum works. Having a high workload will prevent them from attending these sessions, which will eventually result in a less effective implementation”.*

Another inhibitor for the Scrum adoption in SMEs is not having any training. According to a few participants not giving enough training for employees is bad for the Scrum adoption. The importance of a sufficient amount of training comes from the fact that a lot of people nowadays know what Scrum is. However, very few people know how it works. Thus, receiving no training could mean that only the theoretical knowledge is used in the implementation, neglecting the practical aspects of the process. This could result in a less effective implementation. On this point Jurre Emphasized: *“Nowadays a lot of people know about Scrum, either from their prior education or from other resources. However, this knowledge is*

sometimes theoretical and working with Scrum could be different from what you see in books. In this case, giving no training before or during the implementation of Scrum could lower the acceptance of the employees which will eventually result in a less effective implementation”.

Different role expectations was also mentioned by a few participants as a problematic factor for the Scrum adoption. While developers could see Scrum as a framework that can protect them from unorganized and unstructured workload, managers could perceive it as a way of losing control because they would not be able to manage their staff as they used to do. On this point Hans elaborated: *“Not every person will enjoy Scrum equally. I noticed (at other SME’s) that the developers enjoy the Scrum methodology more than the managers do”.*

4.2.2 Team level

When looking at the team dynamics, some participants underlined that the implementation of Scrum should not be done by a person outside the team. These participants stated that when Scrum is implemented by someone who is new in the company, the other team members will associate that person with the adoption process. Meaning that the other team members will see that person as the outsider that came to change the current working methodology. Instead, when Scrum is implemented by someone already known in the company, the other team members see the adoption process as a gradual process that was already being processed. On this point Rico mentioned: *“You have to be careful that if you let a new person be responsible for implementing a new working methodology you can face problems with the implementation. The reason behind this is because the other employees could think that this person is new here and he is trying to implement a new way of working that will change our whole system. They may see him as the outcast that came to change everything”.*

Having bad communication among and between teams is by many participants seen as another inhibitor for the implementation process of Scrum. Regarding communication among teams, having insufficient communication, especially at the beginning stage of the adoption, was found to prevent teams from having a good implementation. This is because during the initial stage of the implementation process, many team members tend to have questions regarding the new way of working. If the communication is not good and clear, answering these questions can take longer than it should, and this can end up hindering the whole

implementation process. On this point Hans noted: *“At the start of the implementation process, a lot of questions could arise among team members. By having insufficient communication channels, answering the questions of the team members will take longer than it should take”*.

Regarding communication among teams, participants found that different teams have different expectations for Scrum. By having insufficient communication between teams, the teams will not be able to transfer their opinions and expectations efficiently which will result in a less effective Scrum implementation. On this factor Willem said: *“Bad communication is not good for a good Scrum implementation especially if you have different teams, for example, we have a marketing team and a development team and both teams have different demands and expectations for Scrum. So, if the communication between these two teams is not good then the implementation will not be efficient”*.

Lastly, according to few participants, when team members do not share the same skill level, this can also hinder the implementation process. This is because the ones with a high skill level tend to adapt earlier to the new working methodology, while it could take longer for the ones with a lower skill level. Having these differences will make the less skilled team members less motivated to adopt to the new working methodology. On this point Jorick elaborated: *“I think that when you have different skill levels in the team, the implementation of the Scrum framework will become harder. When all team members share the same skill level, they will be able to follow the implementation process equally, this would not be the case if the differences in the skill levels were big”*.

4.2.3 Organization level

According to several participants, SMEs are too small for Scrum, hence, the size of companies could be an intrinsic limitation for Scrum implementation. The reason behind this assumption is that very small enterprises (fewer than 15 employees), usually have less manpower, which means that the same team will be responsible for, for example, ongoing projects, emergent projects and for solving urgent incidents. Having only one team do all these tasks can make meeting the deadlines and deliverables for the sprints almost impossible. According to the participants, SMEs can implement Scrum only if they have at least two teams, one for ongoing projects and one for the other tasks. On this point Willem elaborated: *“SMEs are small for*

Scrum because in the case of small enterprises the company usually consists of one small team and if you use Scrum, you will need at least two teams in the company.” In addition, Rutger noted: *“At the beginning of our company, it was very hard to implement Scrum. We really tried to implement it, but we were too small for it. You will need enough people and capacity to be able to implement Scrum. Now we have 15 people in our company, I think that implementing Scrum should be easier”*.

SMEs are more flexible than Scrum was also mentioned as one of the inhibitors of Scrum adoption in SMEs. According to a few participants, flexibility is what differentiates SMEs from large organizations. The advantage of SMEs is that they usually have shorter communication channels, are less hierarchical, and the reaction time is shorter. By adopting Scrum and its sprints, SMEs can lose the most important advantage they have compared to large organizations, namely, the flexibility. On this point Mart pointed out: *“What differentiates SMEs from large organizations is their ability to operate in a more flexible way. By applying Scrum and the sprints you will sacrifice the most important quality that SMEs have, namely, the flexibility to be ready for the customer’s demands in no time.”*

Another inhibitor for Scrum adoption in SMEs that was mentioned by several participants is that management and teams do not share the same working method. According to these participants, when teams and managers do not work according to the same working methodology, the implementation of Scrum can be negatively affected. Participants noted that at the beginning of the implementation process the development teams adapted to Scrum. However, managers did not do the same and opted for approaching the developers whenever they received a new work order or a request from a customer. Having two different working methods in the organization was very frustrating for the developers and that lowered their faith in the Scrum framework. On this point Kai elaborated: *“I still remember when we first implemented Scrum in our development team. The adoption went well, and all the developers were happy about the new working methodology. However (...) the management team kept working according to the old way and kept coming directly to the developers when they had new demands from customers. This was very frustrating for the developers, and it took time until the managers were used to make tickets for their demands rather than approaching the developers whenever they wanted something”*.

5. Discussion

This research explored the main question: “How do SMEs differ from large organizations in terms of enablers and inhibitors of Scrum teams’ adoption?”. To answer this research question, literature-based enablers and inhibitors of Scrum adoption in large organizations were compared to those found after analyzing the qualitative data collected during the interviews with employees from three divisions from one SME Based on both sources of data. By doing this, it was found that SMEs and large organizations do not deviate much in terms of the enablers and inhibitors of Scrum adoption. However, not deviating much does not mean that they are similar. Hence, this thesis extended the current literature on Agile implementation and, especially, on Scrum adoption by pointing out the similarities and differences between large organizations and SMEs in terms of the enablers and inhibitors of Scrum adoption. Before this research was done, there was a gap in the literature regarding the enablers and inhibitors of Scrum adoption in SMEs. By doing this research in three divisions of one SME, the literature on the enablers and inhibitors of Scrum adoption in SMEs is enriched with findings that are specific for SMEs rather than gathering information from large organizations and assuming that they are also applicable for SMEs. In [Table 4](#) the found similarities and differences in terms of enablers and inhibitors between large organizations and SMEs are stated.

	Similar enablers and inhibitors in large organization and SMEs	Enablers and inhibitors only related to SMEs
Enablers	<p>Individual level: <i>Strong commitment to change</i></p> <p>Team level: <i>Including people with previous experience with Scrum</i></p> <p>Organization level: <i>Management and team members share the same vision and working method</i></p>	<p>Individual level: <i>Being familiar with working according to defined roles</i></p> <p>Team level: <i>Having the right tools – having periodic feedback sessions</i></p> <p>Organization level: <i>Being less flexible to customers - motivating employees</i></p>
Inhibitors	<p>Individual level: <i>Receiving no training - resistance to change- high workload</i></p>	<p>Individual level: <i>Different role expectations</i></p>

	<p>Team level: <i>Difficult communication between and among teams - different skill level</i></p> <p>Organization level: <i>Management and teams do not share the same working methods</i></p>	<p>Team level: <i>The implementation should not be done by a new person</i></p> <p>Organization level: <i>SMEs are too small for Scrum - SMEs are more flexible than Scrum -</i></p>
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As the research question of this research mainly focusses on the differences between large organizations and SMEs in terms of enablers and inhibitors of Scrum teams' adoption. Only the differences will be discussed in the following paragraphs.

5.1 Different enablers and inhibitors of Scrum adoption in SMEs compared to large organizations

The following two sections discuss the enablers and inhibitors of Scrum adoption that are applicable only to SMEs, after a thorough comparison with the literature on Agile implementation in large organizations. The importance of these factors for SMEs comes from the fact that this research was conducted in a SME which makes the findings more applicable and reliable for this specific context.

5.1.1 Enablers

A very interesting, almost paradoxical, enabler for Scrum adoption in SMEs that could be added to the literature on Scrum adoption is *being less flexible to customers*. This enabler seems rather unusual as being flexible and "being agile" are the bases of working with Scrum as was stated by Moe, Dingsoyr, & Dyba (2010). According to our data, being too flexible could prevent SMEs from meeting their deadlines as constant new work orders may add up to the ongoing ones. Indeed, during the implementation phase of Scrum, the organization tend to learn how to work according to specific time slots (Rajasekar, 2014). Hence, meeting sprints deadlines becomes essential for the learning process and that is why SMEs should be less flexible during Scrum adoption. Thus, the beginning stage of the implementation of any new process or framework needs to have a clear and rigid structure (Rajasekar, 2014). Without

this, the people in the organization may not have precise steps to follow and stick to during the implementation process. Hence, this could be the reason why the findings of this thesis seem to associate being less flexible with enhancing the implementation of Scrum. A similar reasoning for this enabler was found in the literature on business growth cycle. According to Navickas, Bagdonaitė, & Juščius (2006), small businesses are more prone to problems that are caused by unclear working's structure than large organizations. According to the same study, the first stage the lifecycle of small businesses is associated with many uncertainties and learning's objectives. Hence, having a strict and clear structure in the first stages may affect the flexibility on short term. However, when businesses become more mature, flexible structures become more appropriate.

This research can also extend the literature by adding *being familiar with working according to defined roles* as a factor that can enhance the Scrum adoption in SMEs. According to a prior study by Bibik (2018), this enabler is particularly important during the first stage of the implementation process as a lot of concerns could occur among employees. People may struggle in following the Scrum implementation and may eventually get lost in the process (Bibik, 2018). Hence, the importance of this enabler could be linked to the theories about the lifecycle of teams and conflicts during team formation. In this regard, in their study on team lifecycle and role conflicts within teams, Santos and Passos (2013) stated that being familiar with working with defined roles is essential for avoiding conflicts during the formation of new teams, as team members will be engaged in interpersonal relationships in which information and knowledge can be shared. Therefore, since Scrum works with three well defined roles in which no person can be responsible for two roles at the same time (Layton, 2015), being familiar with working according to defined roles can make the implementation process easier and smoother (Aneta, Agnieszka , Dorota, & Paweł, 2016).

Having *periodic feedback sessions* could also be added to the literature on Scrum adoption as it was mentioned as another important factor of Scrum adoption in SMEs. According to Bibik (2018), the beginning stage of any implementation is full of learning moments and many mistakes may take place. By having periodic feedback sessions, team members can have the possibility to reflect on their mistakes and learn from them (Bibik, 2018). Also, during these feedback sessions, team members are more likely to monitor the implementation process step by step and that may increase their involvement in the process. This is in line with the theory

of learning organizations. According to Annosi, Martini, Brunetta, & Marchegiani (2020), including feedback sessions is very important in the organizational learning process as team members could evaluate the effectiveness of their work and learn how to do it in a better way next time. On the same subject of learning organizations with more focus on SMEs, an empirical study of Salehzadeh et al. (2014) went in depth to get a better understanding of why SMEs are better examples of learning organizations than large organizations. Salehzadeh et al. (2014) stated that due to the relatively small size of SMEs and their horizontal structure, creating a learning culture where asking questions, testing and providing feedback is much easier. Therefore, providing and receiving feedback is essential for learning organizations, especially for SMEs, as they may lack the needed financial sources for proper training and courses. In this case, feedback sessions can be their main source of learning by reflecting on their work and learn from their own mistakes.

Another enabler for Scrum adoption that could be added to the literature on Agile implementation in SMEs is *having the right tools*. Scrum is a framework and, in order to implement it effectively, SMEs would have to use the “right tools”. According to the results of this thesis, “right tools” means being able to use software that is easy to follow for all team members as using complex software could increase the anxiousness of the team members towards Scrum. This enabler was slightly mentioned in the studies of Hanslo and Mnkandla (2018), and Bibik (2018), but not fully explained. On the contrary, Dada and Sanusi (2021) underlined that Scrum is a framework and, as for any framework, companies need to use the right tools to make the framework work. The study of Dada and Sanusi described frameworks as souls that need bodies to operate efficiently, the body in this case is the software. This is in line with what the results of this thesis point to. Furthermore, according to Brown and Hanlon (2016), having the right software from the beginning is very important for SMEs as they, in contrast to large organizations, usually do not have large financial capacity that makes them able to use and test several software until they find the most appropriate one. Beside the financial side, the same study stated that having a good working software can, on the one hand, make the employees of the SME able to do their job in an easier way. On the other hand, having a good working software can encourage customers to work with a SME since they could expect less technical problems.

Lastly, *motivating employees* could be added to the literature as an enabler for Scrum adoption in SMEs. Employees could be unsure or scared of implementing a new working methodology instead of the one they are using. On this point, Hanslo and Knkandla (2018) stated that motivating employees regarding the new way of working will result in a better work quality and will provide an easier way of getting things done will encourage employees to be more involved which will make them adopt Scrum easier. On the importance of motivating employees in SMEs, Lukasik (2017) noted that humans are usually the most important asset in SMEs. In contrast to large organizations, SMEs have fewer employees which makes them more valuable for the company. For this reason, motivating employees in SMEs may reduce the rate of turnover in the SME and can enhance their effectiveness in the company (Lukasik, 2017).

Proposition 1: Compared to large organizations, SMEs that aim to adopt Scrum need to be less flexible to customers, be familiar with working according to defined roles, have periodic feedback sessions, have the right tools, and motivate their employees if they want to implement it successfully.

5.1.2 Inhibitors

Interestingly, according to the results of this thesis, *the implementation should not be done by a new person* came to the surface as an inhibitor of Scrum adoption in SMEs. In line with the finding of Ozierańska, Kuchta, Rola and Skomra (2016), making a new person responsible for the Scrum implementation can make the other employees associate the whole implementation with this person. Hence, the employees might see the Scrum adoption as an idea from an outsider that came to change the whole company rather than a real need of the company. On the contrary, when the implementation is done by a known person in the company, the other employees could see the implementation as a gradual process that was already being processed. The importance of having someone from *within* the organization leading the new adoption might be explained through the lens of Social Identity Theory (Ashforth and Mael, 1989). According to this theory, people tend to associate themselves with groups and places as these give them the feeling of belonging. When people become associated with groups, they start to see people from outside the group as strangers (us versus

them). By having this mindset, the in-group team members will discriminate more frequently any suggestions or changes that come from outside the group (Ashforth & Mael, 1989). Hence, having a new person leading the implementation process may reduce the acceptance of the other team members, which could result in a less efficient implementation.

Another inhibitor for Scrum adoption that can be added to the literature is that *SMEs are more flexible than Scrum*. The findings of this thesis seem to suggest that Scrum could decrease the flexibility of SMEs, which completely contradicts with what Dikert et al. (2016) and Piattini et al. (2010) said about Scrum enhancing the flexibility of SMEs in managing their own projects. According to the data from the interviews, flexibility is what differentiates SMEs from large organizations as they enjoy shorter communication channels, are less hierarchical, and have the ability to react to the customers' demands in no time. By adopting Scrum, SMEs might no longer be able to react to customers' needs as fast as they used to do before Scrum as working with sprints defines more rigid time slots. By doing so, SMEs could lose their most important advantage they have compared to large organizations, namely, the flexibility. This finding is in line with the results from an empirical study of Alpan, Yilmaz and Kaya (2007), in which the authors tried to look on the qualities of small enterprises rather than SMEs as a whole. According to this study, small enterprises have an adaptive planning structure which is even more flexible than the structure of medium and large sized organizations. Therefore, it can be argued that Scrum may be more appropriate for medium-sized organizations rather than for small-sized organizations.

Proposition 2: Compared to medium- and large-sized enterprises, small-sized enterprises that aim to adopt Scrum need to be aware that they may be more flexible than Scrum and that may inhibit the Scrum implementation.

Another inhibitor of Scrum adoption can be added to the literature, namely, *SMEs are too small for Scrum*. According to data from this research, SMEs and especially small-sized enterprises, do not seem to be suitable for Scrum because they usually have a small number of employees. However, this finding is the opposite of what Dikert et al. (2016) and Piattini et al. (2010) proposed about Scrum when they said that Scrum was especially developed for small teams. Indeed, having a small number of employees means that the same team is responsible for ongoing projects, emerging projects, and for solving urgent incidents. Having one team for all those tasks could make meeting deadline impossible. The results of this thesis

underline that in order to be able to implement Scrum, the SME should have at least two teams (approximately seven persons in each team), one team for ongoing projects, the other team for preparing the emergent projects and for solving the urgent incidents. They also highlighted that if an SME does not have at least two teams, then Scrum might not be ideal to be implemented. As the literature does not provide an explanation on this inhibitor, a potential reason could be the lower capacity that SMEs have compared to large organizations. Having low-capacity means having fewer employees and resources which makes these employees responsible for many tasks at the same time, which is against the base element of Scrum implementation, namely, having a clear role in Scrum teams (Sverrisdottir, Ingason, & Jonasson, 2014).

Proposition 2: Compared to medium- and large-sized enterprises, small-sized enterprises are less appropriate for Scrum adoption.

Lastly, *different role expectations* could also be added to the literature as it is found to inhibit Scrum adoption in SMEs. According to a study by Takpuie and Tanner (2016), which was not done specifically on Scrum adoption but dealt with different role expectations within organizations, not all employees enjoy adapting to a new working method equally. Indeed, a new working method could be beneficial for part of the people in a company and detrimental for others. Therefore, on the one hand, Scrum can protect developers from a high and unorganized workload, however, on the other hand, managers could look at it differently. Managers could feel a loss of control as employees will become freer in managing their work, which was for a long time the task of a manager. In order to get a better understanding of the roots of this inhibitor, Team Conflict Theory can help (Quigley, & Tesluk, 2009). According to Tekleab, Quigley, & Tesluk (2009), different role expectations have a negative effect on team cohesion which can result eventually in more conflicts inside teams. By having conflicts inside teams, the implementation of any project or method can be negatively affected as all people involved in the implementation will see it from their own point of view. Not from the point of view where the interest of the organization as a whole is central. Hence, having different role expectations among team members could inhibit the Scrum adoption.

Proposition 3: Compared to large enterprises, SMEs that aim to adopt Scrum need to be aware that, making a new person responsible for Scrum implementation or having different role expectations between individuals could inhibit the Scrum adoption.

To conclude, the results of this research showed that SMEs and large organizations do not deviate much in terms of the enablers and inhibitors of Scrum adoption. In this sense, this research collaborates some of the findings reported by previous studies. However, this research also added several enablers and inhibitors that are specifically related and applicable to SMEs. In doing so, this thesis has extended previous knowledge on Agile and Scrum implementation in SMEs illustrating those factors that may hinder or boost such adoption. Below, practical implications for managers are discussed to make such adoption unfold in a smooth and successful way.

Before closing the section about the differences between large organizations and SMEs in terms of enablers and inhibitors of Scrum adoption, it can be argued that several enablers and inhibitors that are argued in this section to be related only to SMEs could also be related to large organizations. The reason behind this assumption is because Agile and Scrum are relatively recent subjects. Hence, less research is done about this. For this reason, this research will continue considering the found enablers and inhibitors only related to SMEs until future researches about Scrum adoption in large organizations point them out as also related to large organizations.

5.2 Practical implications

Beside the theoretical implications, this research also provides practical advice for the managers of SMEs regarding Scrum implementation. According to our findings, SMEs managers should be aware of the importance of several factors while they are considering switching to Scrum. First of all, managers should ensure that employees will be committed to the new working methodology. A possible way to ensure their commitment would be to make them part in the decision-making process since this would make them feel valuable and important for the organization. Similarly, managers could think of providing trainings on Scrum and Scrum teams which will make the employees more motivated to be involved in the implementation process (Naquin & Holton, 2002).

Secondly, including someone with previous experience in Scrum will be beneficial in the implementation process. The experienced person will help with possible problems that could occur during Scrum adoption (e.g., having different skill levels in teams), or when employees cannot receive training due to, for instance, lack of time (Hanslo & Mnkandla, 2018). The

experienced person could spend more time with the less skilled individuals until they build up the needed knowledge to operate on their own. However, SMEs managers should be aware that the implementation of Scrum should not be done by a new person in the company as the other team members might associate the Scrum implementation with that person, which could lead the other team members to experience the implementation as if it came from the outsider. This could make them less motivated to be part of the implementation process (Ozierańska, Kuchta, Rola & Skomra, 2016).

Thirdly, SMEs managers should give their employees enough learning time during the implementation process either by reducing their daily tasks or by expanding the Scrum adoption process over a longer period of time. By doing so, the employees can have fewer problems deriving from their high workload. This practical implication does not ignore the fact that some SMEs are busy with their daily tasks, however, it suggests that SMEs should find the right balance between doing daily tasks and make time for learning new things as learning is a key factor for improvement (Motallebzadeh & Mamdoohi, 2011).

Fourthly, SMEs managers should deal with the tension regarding flexibility, as SMEs are required to be very flexible and react ad hoc, while Scrum is more about working with sprints and deadlines. A possible solution to reduce the tension is to find the right balance between saving the most important quality of SMEs, namely, their flexibility, while having a structured work method that could reduce the problems of unorganized workload. In order to find the right balance, managers should trust their employees and give them the right to decide the amount of work they can handle in each sprint while keeping enough time available to react to the requests of the customers (Spreitzer & Mishra, 1999).

Lastly, the managers must ensure that employees are sharing the same vision and working method as the managers themselves. Sharing these two points will make the employees more involved and less resistant to any change and that could enhance the results of Scrum, or any other Agile adoption. This last practical implication is also approved in a study done by Mael and Ashforth (2001), in which they stated that when employees share the same vision as the organization, the so-called organizational identification will be reached. Due to the organizational identification employees will identify themselves more with the organization, which will result in more involvement and acceptance for the organizational decisions (Mael & Ashforth, 2001).

5.3 Limitations and future research

As all research, this study also has some limitations. The first limitation of this research is that it had three divisions from one IT company as its sample. Among all other industries, the IT industry is the most mature industry regarding Scrum adoption (Schrödl & Wind, 2011). By having all information from three divisions of one IT company, other important insights could have been missed in this research. So, future research could conduct similar research while involving participants from different industries.

The second limitation is that some results in this research is based on assumptions rather than facts. As before mentioned, two of the three divisions are currently not using Scrum. Hence, the collected data on the enablers and inhibitors of Scrum adoption from the participants from these two divisions are only assumptions as they have not implemented Scrum (yet). According to Merriam (1995), when researchers build (part of) their research on assumptions, they should ensure that they acknowledge that their study may be more prone for reliability errors if the assumptions used in their research are proven to be wrong by other researchers.

The third limitation of this research is that all participants were male and Dutch. Having all participants from the same gender and origin eliminated the role of gender and cultural differences. Regarding the importance of gender, a study of Koshal et al. (2004), stated that gender is an important factor in the evaluation process where men tend to be more direct to the point with less attention for details, while women are the opposite in this regard. Having this finding in mind, different and more detailed results could be expected if female participants were included. On the effect of nationality, a study of Winkler and Bouncken (2011) stated that culture does play an important role on how people see things which could result in analyzing Scrum adoption differently, hence, different enablers and inhibitors could be pointed out. Based on the before mentioned limitation, possible future research could involve participants from different genders and origins to see if gender and cultural differences play a role in the enablers and inhibitors of Scrum adoption in SMEs.

The fourth limitation of this research was the sample size. The purpose of this research was to interview at least 15 participants from different roles. Due to external factors, such as the 4th wave of the Covid-19 pandemic and the interviews conducted during the month of December, a very busy month for all participants, only 12 interviews were conducted.

However, this limitation did not affect the quality of the results of this thesis, as all interviews involved a great variety of roles and people within all three SMEs, thus ensuring an overall high quality of the collected data. These interviews included, for instance, two owners and two managers of SMEs, which delivered first-class information. Yet, to explore even more details on how Scrum is implemented in SMEs, possible future research could think of running similar research with a larger sample size.

The fifth and last limitation of this research was that only one person was responsible for both coding and analyzing the data which could make the results more prone to bias (Šimundić, 2013). In order to reduce the chance of bias in the results, and as before mentioned, all participants were emailed their own quotes to reduce the chance of biases in translation or analyzing the data. Almost all participants agreed that the analyzed data is done properly and their statements are literally mentioned. Only one participant asked to add a few words to one of his statements but that was more a change in the structure of the statement and did not affect the content of the quote. Yet, future research may wish to add a second coder to increase the reliability of the translations and the interpretation of the codes.

5.4 Conclusion

The purpose of this study was to point out the differences between large organizations and SMEs regarding the enablers and inhibitors that could boost or hinder Scrum adoption. This research focused on SMEs and collaborated some of the findings of previous literature regarding the enablers and inhibitors of Scrum adoption in large organizations. This means that for some aspects, SMEs and large organizations tend to be quite similar. However, this research has also added several enablers and inhibitors to the existing literature on Scrum adoption which are specifically related to SMEs. The conclusion that these enablers and inhibitors are particularly related to SMEs stems from the fact that the literature on Scrum adoption in large organizations is very rich and, yet, to our knowledge, none of the newly found enablers and inhibitors were mentioned in prior research.

With a specific focus on the differences between large organizations and SMEs regarding the enablers and inhibitors of Scrum adoption, this research added the following enablers to the literature: *Being familiar with working according to defined roles, having periodic feedback sessions, having the right tools, motivating team members, and being less flexible.* Regarding

the inhibitors, this research added the following inhibitors to the literature: *Different role expectations, the implementation should not be done by a new person, SMEs are too small for Scrum and SMEs are more flexible than Scrum.*

Besides adding the before mentioned enablers and inhibitors to the literature on Scrum adoption in SMEs, this research suggested some practical implications for SME managers that are considering implementing Scrum and Scrum teams in their SMEs. By following these suggestions, managers will be able to enjoy and learn from the implementation process as they will be prepared to the problems that could occur during Scrum implementation.

Based on all the findings of this thesis and the findings in the literature regarding the wide adoption Scrum around the world, it is quite evident that Agile and Scrum could become the future of managing projects, not only in IT companies but in many other industries.

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Appendix 1 (Questionnaire Protocol)

Table 3 Questionnaire Protocol

	Questions in case of Scrum adoption	Questions in case of no Scrum adoption	Assisting questions
General questions	<ul style="list-style-type: none"> • Why did you decide to work for this company? • What is your role in the company? • Which framework is your company currently using for managing its projects? Why? • Since how long are you using this framework? What do you think of it? 	<ul style="list-style-type: none"> • Who are you and what your role is in the company? • Which framework is your company currently using for managing its projects? • Since how long are you using this framework? What do you think of it? 	<ul style="list-style-type: none"> • Are you familiar with the Scrum framework?
Enablers	<ul style="list-style-type: none"> • You mentioned that your company is currently using Scrum. Tell me what were the factors that supported the adoption of Scrum framework in your company? Why? In which stage of the adoption did these factors occur? • Which other factors do you find important to ensure the adoption of the Scrum framework? Why is that? 	<ul style="list-style-type: none"> • You mentioned that your company is not using Scrum. Imagine that your company is now considering switching to Scrum, what do you think could support this adoption in your company? And why is that? • In your opinion, which factors could help the implementation? And why is that? 	<ul style="list-style-type: none"> • Could you elaborate more on that? • What do you mean by this point? • Could you give examples on that point?
Inhibitors	<ul style="list-style-type: none"> • During the adoption of Scrum framework, which factors did hinder the adoption? Why do you think so? • How did these factors hinder the adoption? • Which other factors do you expect to hinder the Scrum adoption? Why? • Overall, how did you implement Scrum? • Do you have any additional information that you want to mention? 	<ul style="list-style-type: none"> • What prevented your company from adopting the Scrum framework? • If your company is now considering switching to Scrum, which factors do you expect to hinder the adoption? Why is that? • In your opinion, what makes your company not suitable for Scrum? • Do you have any additional information that you want to mention? 	<ul style="list-style-type: none"> • Could you elaborate more on that? • What do you mean by this point? • Could you give examples on that point? • What steps did you follow to implement Scrum?

Appendix 2 Exemplary quotation for first-order Themes

Table 4 Exemplary quotations for First-order themes

Exemplary quotations	Description	First-order themes
<p>Quote Jan: <i>“If everyone is committed to the change and if we all agree on the added value of Scrum, then the implementation will become easier. If all team members agree that Scrum will improve their work, they will all accept it and this is the first step in a good implementation.”</i></p> <p>Quote Rutger: <i>“Everyone should be committed to the change otherwise the implementation will not go as planned. Everyone should be convinced that Scrum will enhance the work.”</i></p> <p>Quote Kai: <i>“It is essential in the beginning stage of implementation that everyone is convinced of the idea of changing to a new working methodology. Because if they are not convinced that this new way of working will help them then they will not be committed to the changing process.”</i></p>	<p>Quotes from participants regarding an enabler on individual level, namely, commitment to change</p>	<p>1a. Strong Commitment to change</p>
<p>Quote Wouter: <i>“To ensure a good implementation, every person should have a clear role in Scrum teams. The first stage of the implementation is usually the hardest because there are many uncertainties and this is why roles should be defined clearly to prevent team members from getting lost in the process.”</i></p>	<p>Quotes from participants regarding an enabler on individual level, namely, being familiar with working with defined roles</p>	<p>1b. Being familiar with working according to clearly defined roles</p>

<p>Quote Jan: <i>“For working with Scrum everyone should know how to work with defined roles.”</i></p>		
<p>Quote Karel: <i>“Having a person with previous experience in Scrum is very important in the implementation process. At the beginning we had a lot of questions, like, how can we do this and that, what will happen if this happens, this is not working what should I do etc., so having someone who can answer these questions is very important. I really do not know how we could have implemented the Scrum framework without Kai.”</i></p> <p>Quote Rutger: <i>“It is important for the implementation to have a person with previous practical experience with Scrum. Many people know what Scrum is, but very few know how it works in real life, so having a person with that experience will definitely help. I think that the Scrum master or the person that will be responsible for organizing Scrum should have previous experience with scrum.”</i></p>	<p>Quotes from participants regarding an enabler on team level, namely, including people with previous experience</p>	<p>2a. Include people with previous experience</p>
<p>Quote Kai: <i>“Periodic feedback sessions are very important in the implementation process. We had a daily standup and we have feedback sessions after every sprint. In these sessions we look together at how things are going, what can be done better and how we can do it better. So, I really think that having feedback sessions will make the implementation much easier and more efficient.”</i></p> <p>Quote Jurre: <i>“Feedback sessions are essential for a good implementation. Not only for implementing Scrum but basically for implementing any new process. By having periodic feedback sessions, you can learn how things should be done or how they not should be done.”</i></p>	<p>Quotes from participants regarding an enabler on team level, namely, periodic feedback sessions</p>	<p>2b. Periodic feedback sessions</p>

<p>Quote Harm: <i>“I think that when all team members have the same technical knowledge level, the implementation of Scrum will be more useful. If you have a lot of differences in the knowledge level, the one person with a broad knowledge will most often be appointed to do the harder tasks within a sprint to get this sprint done within the same set of time, while the person who does not have the same knowledge, will not, and therefore will not gain more knowledge as easily”</i>.</p>	<p>Quote from a participant regarding an enabler on team level, namely, knowledge level in teams</p>	<p>2c. Similar knowledge level in the team</p>
<p>Quote Jurre: <i>“I think that you will find this point weird, but being very flexible is not a good thing for Scrum adoption. Sometimes you have to be strict to customers because they want that their work or request will be immediately picked up and this is totally understandable. If you do that you will never be able to have the work done by the end of each sprint. You really have to have a strict structure and you have to let customers know that their request will be picked up according to your work scheme not according to theirs. Do not get me wrong, when a customer is having a problem with his web shop, we will intervene immediately but less urgent requests should be picked up according to our time and schedules.”</i></p>	<p>Quote from a participant regarding an enabler on organization level, namely, flexibility with customers</p>	<p>3a. Being very flexible with customer</p>
<p>Quote Willem: <i>“It is very important that managers and team members share the same vision regarding Scrum to ensure a good implementation. If managers see that the new working methodology is not beneficial for the company, they will not support the adoption. On the other side, if the team members do not think that the new working methodology is not the right choice, they will not be open for the adoption and that is the last thing you want to happen in your company.”</i></p> <p>Quote Karel: <i>“What can help the implementation is that the management team and the other team members share the same vision regarding Scrum. If both sides see that Scrum is</i></p>	<p>Quotes from participants regarding an enabler on organization level, namely, sharing the same vision</p>	<p>3b. Team members and management team share the same vision</p>

<p><i>beneficial for their work, then the implementation will be easier.”</i></p>		
<p>Quote Mart: <i>“People could be unsure or scared of implementing a new working methodology instead of the one they are used to. By motivating them that the new way of working will help them in doing their work in a better way, and that they will not be left alone in the implementation process, they will be more involved in the implementation of Scrum.”</i></p>	<p>Quote from a participant regarding an enabler on organization level, namely, the importance of motivation</p>	<p>3c. Motivate team members</p>
<p>Quote Kai: <i>“Having the right tools is having half of the work done. For a good implementation you will need good tools that can help you in the implementation process. In our case Jira was the right software/tool for implementing Scrum. Yet, you have to be careful that the tools you use are only to help you to achieve your goals, so do not let them become your goal.”</i></p> <p>Quote Hans: <i>“It is very important to have the right tools and software during the implementation of Scrum. Having the right tools will make the implementation process much easier.”</i></p>	<p>Quotes from participants regarding an enabler on organization level, namely, having right tool</p>	<p>3d. Having the right tools</p>
<p>Quote Jan: <i>“Resistance to change is for sure one of the most important factors that could hinder the implementation of Scrum. People will probably think why should we change our working methodology while everything is going well.”</i></p> <p>Quote Karel: <i>“Resistance to change was an issue. Not everyone outside the development team saw the necessity for implementing Scrum. For them it was like why would we switch to a new working methodology if our current one is working well.”</i></p>	<p>Quotes from participants regarding an inhibitor on individual level, resistance to change</p>	<p>4a. Employees show resistance to change</p>

<p>Quote Jorick: <i>“In my eyes, having high workload is not beneficial for a good Scrum implementation. I think this way of working will be new for a lot of people, with that being said, employees will need explanation sessions on how Scrum works. Having a high workload will prevent them from attending these sessions, which will eventually result in a less effective implementation.”</i></p> <p>Quote Rutger: <i>“Having high workload will bring no good for the implementation of Scrum. If you are too busy you will have less time for giving and receiving instructions on how to work with Scrum properly.”</i></p>	<p>Quotes from participants regarding an inhibitor on individual level, namely, high workload</p>	<p>4b. Employee have high workload</p>
<p>Quote Jurre: <i>“Nowadays a lot of people know about Scrum, either from their prior education or from other resources. However, this knowledge is sometimes theoretical and working with Scrum could be different from what you see in books. In this case, giving no training before or during the implementation of Scrum could lower the acceptance of the employees which will eventually result in a less effective implementation.”</i></p>	<p>Quote from a participant regarding an inhibitor on individual level, namely, receiving training</p>	<p>4c. Employees receiving no training</p>
<p>Quote Hans: <i>“Not every person will enjoy Scrum equally. I noticed (at other SME’s) that the developers enjoy the Scrum methodology more than the managers do. Developers enjoy Scrum because it protects them from high and unorganized workload. While managers could feel a loss of control as employees will become more free in managing their work.”</i></p>	<p>Quote from a participant regarding an inhibitor on individual level, namely, having different expectations</p>	<p>4d. Employees and managers have different expectations</p>
<p>Quote Rico: <i>“You have to be careful that if you let a new person be responsible for implementing a new working methodology you can face problems with the implementation. The reason behind this is because the other employees could think that this person is new here and he is trying to implement a new way of</i></p>	<p>Quote from a participant regarding an inhibitor on team level, namely, having a new person responsible for the implementation</p>	<p>5a. The implementation done in the team by a new person</p>

<p><i>working that will change our whole system. They may see him as the outcast that came to change everything.”</i></p>		
<p>Quote Hans: “Having insufficient communication channels between and among teams is bad for a good implementation of the Scrum framework. At the beginning of the implementation process, a lot of questions could arise among team members. By having insufficient communication channels, answering the questions of the team members will take longer that it should take and that will definitely hinder the implementation process.”</p> <p>Quote Willem: “Bad communication is not good for a good Scrum implementation especially if you have different teams, for example, we have a marketing team and a development team and both teams have different demands and expectations for Scrum. So, if the communication between and among these two teams is not good then the implementation will not be efficient.”</p>	<p>Quotes from participants regarding an inhibitor on team level, namely, bad communication</p>	<p>5b. Bad communication between and among teams at the beginning of the implementation</p>
<p>Quote Jorick: “I think that when you have different skill levels in the team, the implementation of the Scrum framework will become harder. When all team members share the same skill level, they will be able to follow the implementation process equally, this could not be the case if the differences in the skill levels were big.”</p> <p>Quote Karel: “Having different skill levels in the team is not beneficial for the Scrum adoption. The reason for this is because if you have several people with low skills in your team, they will approach the ones with more skills more frequently for asking questions and for explanation regarding Scrum. By doing</p>	<p>Quotes from participants regarding an inhibitor on team level, namely, different skill levels</p>	<p>5c. Different Skill levels among team members</p>

<p><i>that, the employees with high skills will have less time for their own tasks and that could eventually result in a lower motivation for Scrum adoption.”</i></p>		
<p>Quote Willem: “SMEs are small for Scrum because in the case of small enterprises the company usually consists of one small team and if you use Scrum, you will need at least two teams in the company. You will need one team to take care of the existing projects and the other one for taking care of urgent and new projects. If you have only one team that does both, you will never be able to catch your deadlines and sprints. So, I really think that SMEs and especially small enterprises are too small for Scrum.”</p> <p>Quote Rutger: “At the beginning of our company, it was very hard to implement Scrum. We really tried to implement it but we were very small for it. You will need enough people and capacity to be able to implement Scrum. Now we have 15 people in our company, I think that implementing Scrum should be easier.”</p>	<p>Quotes from participants regarding an inhibitor on organization level, namely, the effect of size in Scrum implementation</p>	<p>6a. SMEs are too small for Scrum</p>
<p>Quote Mart: “What differentiates SMEs from large organizations is their ability to operate in a more flexible way. By applying Scrum and the sprints you will sacrifice the most important quality that SMEs have, namely, the flexibility to be ready for the customer’s demands in no time.”</p>	<p>Quote from a participant regarding an inhibitor on organization level, namely, the flexibility factor</p>	<p>6b. SMEs are more flexible than Scrum</p>
<p>Quote Kai: “For a good Scrum implementation all the people in the company need to adapt to the new way of working, otherwise the implementation will not be successful. I still remember when we first implemented Scrum in our development team. The adoption went well and all the developers were happy about the new working methodology.</p>	<p>Quotes from participants regarding an inhibitor on organization level, namely, sharing the same working method</p>	<p>6c. Management and teams do not share the same working method</p>

However, this was not the case with the management team. **The management team kept working according to the old way** and kept coming directly to the developers when they had new demands from customers. **This was very frustrating for the developers** and it took time until the managers were used to make tickets for their demands rather than approaching the developers whenever they wanted something.”

Quote Rico: “**At the beginning the management team kept working according to waterflow methodology** even though we had already implemented the Scrum framework. But that was temporary of course and after a period of time they started to adopt to the new way of working and everything is going well now. You can say that we all had to grow together until we reached this point.”