Implementing self-organizing Agile teams within a network regime

A research on success factors and barriers for the implementation of self-organizing Agile teams within a network regime operating in a non-software development context

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Abstract

Self-organizing Agile teams are found to be an important aspect of Agile working. The concept of Agile teams is defined in various ways throughout literature. The majority of literature focusses on the implementation of these teams within bureaucratic organizations within a software development context. However, flexible organizations - also called network regimes - have the desire to implement these teams as well. This study first theoretically examines the definition of Agile teams. Additionally, success factors and barriers for implementing self-organizing Agile teams were identified for network regimes operating in a non-software context. This was empirically tested in a qualitative study. Within this study, a total of sixteen interviews and a survey were conducted. The main success factors for implementing self-organizing Agile teams in a network regime found were trust, autonomy, external leadership and the appointment of a driver of change. Furthermore, communication and structure were found to be either success factors or barriers for the successful implementation. The lack of skills and abilities among employees operating in self-organizing Agile teams was found to be a barrier for the successful implementation. This study will help managers of network regimes to successfully implement self-organizing Agile teams within their organization.

Chapter 1. Introduction

To survive in the current labour market, organizations are continuously searching for ways to become more flexible in order to rapidly respond to changes in the labour market and to constantly adapt to their customers' needs (Porter, 2001; Hoda, 2011). In order to do so, many organizations are trying to change their bureaucratic organizational structure into a flexible one (Kuipers, van Amelsvoort, & Kramer, 2010). The newly used term for this flexible way of working is 'Agile' working. A frequently used definition for Agile working comes from Highsmith and Fowler (2001), who described Agile working as: "valuing individuals and interactions over processes and tools, working software over comprehensive documentation, customer collaboration over contract negotiation and responding to change over following a plan" (p. 2). An important element of Agile working is the implementation of (self-organizing) Agile teams within organizations (Moreira, 2013; Hoda, 2011; Hoda, & Murugesan, 2016; Hoda, Noble, & Marshall, 2012; Hoda, Noble, & Marshall, 2013). These teams are important since they enable organizations to speed up the process of decision making, which makes it possible for them to adapt more rapidly to their customers' needs. Even though the concept of self-organizing teams seems to be upcoming nowadays, the overall trend to change to a flexible structure revolving around self-organizing teams is not an unknown movement within companies. The origin of these teams can be found in the Durham-case (Trist & Bamforth, 1951). There, British coal miners took the initiative to turn their individually divided and specialized way of working into working in teams in which all employees could carry out all tasks together. This

shift towards what was called 'autonomous groups', improved economic and social circumstances drastically. Within this new way of working, the quality of working life, flexibility, control, innovation and product quality became key elements (van Amelsvoort, Kuipers, & Kramer, 2010).[1] Because of the great effects of these autonomous groups found in the Durham-case, much literature was written after this event on how to implement a more flexible structure revolving around these self-organizing, autonomous groups. It was claimed that these teams could be implemented to make bureaucratic organizations more flexible and responsive to their environment (Moreira, 2013; Hoda, 2011). Furthermore, many new concepts for these autonomous groups like self-organizing teams, empowered teams, leaderless teams, self-managing work teams, self-regulating work teams and Agile teams showed to emerge in the literature (Castiglione, 2007; Karhatsu et al., 2010).

These above-mentioned concepts that are related to autonomous groups are used simultaneously, without making a clear differentiation between them. Since these terms are used simultaneously, there is a lot of ambiguity about the actual definition of the concepts. Furthermore, it causes a lack of clarity on what the newly used term of 'Agile teams' adds to the literature. It is therefore theoretically relevant to compare these interrelated concepts to come up with a comprehensive definition of 'Agile teams'. This will help organizations that want to implement these teams to have a clear idea about how these teams can be designed.

Extensive literature is written on how to implement these nowadays called self-organizing, Agile teams. However, a majority of the empirical evidence regarding implementing self-organizing teams was found for organizations operating within the software development industry (Karhatsu, Ikonen, Kettunen, Fagerholm & Abrahamsson, 2010; Hoda & Murugesan, 2016; McHugh, Conboy & Lang, 2012; Brede Moe, Dingsoyer & Dyba, 2008; Boehm & Turner, 2005). Therefore, until now little empirical evidence can be found on companies that are not operating in the software development branch, whereas this way of working recently gets more and more attention from companies who are operating in different business areas (Moreira, 2013). Furthermore, almost all literature written on this topic focuses on how to implement this flexible way of working in bureaucratic organizations to make them more flexible and responsive to their environment. This is because bureaucratic organizations have many hierarchical layers which make it increasingly difficult to implement Agile teams. However, flexible organizations (also called *'network regimes')* are also interested in implementing these teams (Moreira, 2013). A network regime is an organization which operates in a very dynamic environment and is found to be capable of being very flexible and adapting rapidly to its environment in a self-organizing way (Kuipers et al., 2010). Reasons for these network regimes to implement self-organizing teams can be that they are growing and the need for a clear organizational design and more (cross-organizational) knowledge sharing therefore arises.

[1] Retrieved from A Recommendation on How to Successfully Implement Self-Organizing Teams in atrain, Project Report, den Hartog, K. & Billen, Y., 2018

Moreover, when a network regime is growing, a clear understanding of where the decision-making power should lay becomes of great importance A possible solution to solve these upcoming problems for growing network regimes would be to implement an organizational structure revolving around self-organizing- or Agile teams. Another possible driver for network regimes to implement Agile teams is to become more cross-functional and improve information sharing and customer centricity by creating Agile customer centric teams. Moreover, the lack of team feeling and lowering the workload can be valid reasons for network regimes to implement Agile teams[2]. However, little is known on how these network regimes can successfully implement Agile teams in order to become even more responsive to their environment and overcome the above mentioned problems within their organization. It is therefore important to conduct empirical research on which success factors and barriers can be found when implementing Agile teams within a network regime.

When looking at the literature, many possible success factors and barriers can be identified, and several are claimed to be crucial elements for self-organizing teams to be successful within (bureaucratic) organizations. However, these elements are never empirically tested within network regimes (Karhatsu, Ikonen, Kettunen, Fagerholm, & Abrahamsson, 2010). Therefore, it is of practical relevance to conduct a field study to confirm which elements can be found to be success factors or barriers when implementing self-organizing Agile teams within a network regime. Next to that, it is crucial that a comparison between network regimes and bureaucratic organizations is made regarding these elements.

Consequently, the research question is as follows:

'How can Agile teams be clearly defined and which success factors and barriers can be identified when implementing these teams within a network regime operating in a non-software development environment?'

To provide a clear answer to this question, this study will be split in two parts, which will be answered in different sections. The first part of the question is:

'How can Agile teams be clearly defined?'. This part will be answered in Chapter 2, by means of theoretical research. Chapter 2 will also expound on literature concerning success factors and barriers for implementing self-organizing Agile teams to provide a framework. This framework will be used when analysing and making conclusions about the empirical evidence. The second part of the question 'Which success factors and barriers can be identified when implementing these teams within a network regime operating in a non-software development environment?' will be empirically answered in the results section, which can be found in Chapter 4. A conclusion and discussion of the overall results will be clarified in Chapter 5.

[2] Retrieved from A Recommendation on How to Successfully Implement Self-Organizing Teams in atrain, Project Report, den Hartog, K. & Billen, Y., 2018

Chapter 2. Theoretical Framework

As stated in the chapter above, the research question *'How can Agile teams be clearly defined and which success factors and barriers can be identified when implementing these teams within a network regime operating in a non-software development environment?'* will be theoretically examined in the chapter. By means of a theoretical review, several interconnected definitions of Agile teams will be stated below and one definition will be picked. Thereafter, a theoretical framework will be constructed by examining general literature concerning several success factors and barriers encountered when implementing Agile teams in (bureaucratic) organizations. Subsequent, specific success factors and barriers for implementing Agile teams within a network regime were also explored. The various success factors and barriers recovered will serve as framework when analyzing and drawing conclusions about the empirically found evidence.

2.1. Defining Agile teams

In 2001, several software developers defined the "Manifesto for Agile Software Development", which drew the attention towards the concept of Agile working. The definition they gave to Agile working can be found in the introduction above (Highsmith & Fowler, 2001, p. 1). An important aspect that was mentioned in the Manifesto was the need for Agile teams. These teams should be self-organizing, which enabled fast decisions making. Teams are not a new concept within literature, and therefore the already existing concepts interconnected to Agile teams are used simultaneously. Hence, it is important to make a distinction between these different terms and to clarify what aspects Agile teams have in common with – or differ from – the other existing concepts. Therefore, multiple definitions and synonyms of Agile teams are discussed below and the most suited definition will be chosen to use throughout this research.

Concepts used throughout literature interconnected with Agile teams are i.e. empowered teams, leaderless teams, self-managing work teams, autonomous teams, leaderless groups, self-regulating work teams, self-managing (work) teams, self-determining teams, self-designing teams, cross-functional teams, and Scrum teams (Castiglione, 2007; Karhatsu et al., 2010). To discover which of these concepts are mostly used as synonyms for Agile teams, it is important to find out how Agile teams are mostly defined within several researches. Moreover, the main characteristics mentioned for Agile teams within various studies should be revealed.

Regarding characteristics of Agile teams, Stobbeleir, Deyaert, Meulenaer and Muylaert (2018) stated Agile teams should be self-managed, project based, multi-disciplinary and customer-based. Moreira (2013), however, found the three most important attributes of Agile teams to be small yet skilled teams, having ownership of a functional piece of a product, and the aspect of colocation. Furthermore, he states that the teams, which he also calls 'Scrum teams' or 'self-organizing teams', should be cross-functional, whereas Moe, Dingsøyr and Dybå (2008) encountered difficulties for

Agile teams to be cross-functional. They did research on self-organizing teams within an Agile software development context, but did not further elaborate on defining these teams. They used both the terms ‘self-managing teams’ and ‘self-organizing teams’ as synonym for Agile teams, which causes confusion.

Furthermore, Asproni (2004) defined Agile teams as “teams structured in order to deliver valuable software on time and on budget in a context of frequent changes in requirements” (p. 6). He therefore used the term of Agile teams specifically in a software development context. Next to that, McHugh, Conboy and Lang (2012) use the concept ‘software project teams’ within an Agile environment, simultaneously with Agile teams and self-managing teams. They define Agile teams as “a team which encourages autonomy and which gives individuals the environment and support they need to get the job done” (McHugh, Conboy, & Lang, 2012, p. 71). Furthermore, they claim that leadership within these teams is shared and an Agile team should have substantially more control than regular teams. However, next to the term Agile teams, the concepts ‘software project teams’ and ‘self-managing teams’ are used simultaneously without making a clear differentiation between the different concepts (McHugh et al., 2012). Withworth and Biddle (2007) talk about Agile (software development) teams, and describe them as complex adaptive socio-technical systems, without further defining the term.

As can be drawn from the literature above, the most frequent synonyms for Agile teams found in several researches are ‘self-organizing teams’, ‘Scrum teams’, ‘self-managing teams’, and concepts clearly focussed on the software development context. The above stated concepts will be discussed so that the several definitions can be compared.

A ‘Scrum team’ was defined by Moe, Dingsøyr and Dybå (2010) as: “a team which is given significant authority and responsibility for many aspects of their work, such as planning, scheduling, assigning tasks to members, and making decisions: the team is accorded full authority to do whatever it decides is necessary to achieve the goal” (p. 480). This definition states that Scrum teams have as much autonomy as they need, as long as the overall goal will be achieved in the end.

Multiple varying definitions can also be found regarding the concept ‘self-organizing teams’. Guzzo and Dickson (1996) defined self-organizing teams as: “teams of employees who typically perform highly related or interdependent jobs, who are identified and identifiable as a social unit in an organization, and who are given significant authority and responsibility for many aspects of their work, such as planning, scheduling, assigning tasks to members and making decisions with economic consequences” (p. 324). This definition therefore states that self-organizing teams are not fully uncontrolled, since they are given ‘significant authority’. Another definition comes from Parker and Holesgrove (2015), who define a self-organized team as: “a self-regulated, semi-autonomous small group of employees whose members determine, plan and manage their day-to-day activities and duties under reduced or no supervision” (p. 324). The statement ‘reduced or no supervision’ also shows that each self-organizing team can have another amount of autonomy, since the one team might

have reduced supervision, whereas the other might have no supervision at all. Next to that, the two concepts ‘self-organizing teams’ and ‘Agile teams’ are mainly used synonymously (Hoda, 2011; Moreira, 2013). Hoda (2011) states that ‘self-organizing Agile teams’ are composed of “individuals that manage their own workload, shift work among themselves based on need and best fit, and participate in team decision making” (p. 1). Furthermore, Larsen (2010) defines a self-organizing Agile team as: “a group of peers using one or more Agile methods that share a goal and accomplish the goal through collaboration” (p. 29). Additionally, Moreira (2013) states that: “when an Agile team is self-organizing, we mean that a group of peers has assembled for the purpose of bringing a software development project to completion using one or more of the Agile methodologies … Attributes of self-organizing teams are that employees reduce their dependency on management and increase ownership of the work. This includes increasing team accountability and responsibility” (p. 36).

The last concept frequently found in literature when looking for Agile teams, is a ‘self-managing (work) team’. A ‘self-managed (work) team’ is an often-used concept in literature to describe a team with substantial autonomy. Solansky (2008) defined it as: “work teams that are allowed to self-manage their team processes, that is, the team has the authority and responsibility to manage how their team functions … Typically self-managed teams have no formal leader designated by the authority that creates the team. Rather, the team is allowed to designate its own leader” (p. 333). Another definition states that a self-managed work team is “a group of individuals who have been given the responsibility to complete a whole task and to make the decision as to how to complete it” (Elloy, Terpening & Kohls, 2001, p. 322). Regarding these definitions it seems that within self-managing work teams there is a leader, but this leader can be picked by the team.

Literature seems to be inconclusive about the definition of Agile teams, since it is indeterminate whether the teams should be cross-functional or not, or whether they should be customer centric or at least project based. However, one clear aspect of Agile teams was found in all definitions. This aspect was that the Agile teams should be at least self-organizing or self-managing in a way. Another great similarity of all concepts lies in the fact that the team itself decides how work is coordinated, but they do have some external guidance to optimally perform. It was emphasized in all definitions that there should be enough checkpoints established by the management to prevent instability (Cockburn and Highsmith 2001; Takeuchi and Nonaka 1986; Kuipers et al., 2010). Hence, Agile teams are in fact self-organizing teams, but the main difference with normal self-organizing or self-managing teams is that Agile teams are operating in an Agile environment, using methods like Scrum. As found in the several definitions of self-organizing, self-managing and Scrum teams, the amount of autonomy per team can differ, which thus also applies for Agile teams. Since the most important characteristic found in all definitions of Agile teams is the fact that they are self-organizing, the concept used throughout this research will be ‘self-organizing Agile team’.

2.2. Success factors of self-organizing Agile teams within (bureaucratic) organizations

Self-organizing Agile teams are a new phenomenon in the non-software development context. Therefore, it is of great importance to find out which elements are claimed to be success factors or barriers for implementing these self-organizing Agile teams within (bureaucratic) organizations in literature. Also, as mentioned in the first chapter, hitherto not much literature is written on success factors and barriers encountered when implementing self-organizing Agile teams within a network regime. Therefore, firstly, general literature found on success factors and barriers encountered with implementing self-organizing Agile teams within bureaucratic, software development organizations will be examined. This will be done to compare this general literature to the success factors and barriers empirically found within a network regime operating in a non-software development environment. Secondly, some specific literature on success factors and barriers for implementing self-organizing Agile teams within a network regime will be discussed.

2.2.1. Autonomy, team orientation, shared leadership, redundancy, and learning

Moe, Dingsøyr and Dybå (2008) suggest five elements that should be present in organizations in order to make self-organizing Agile teams work. These five elements are autonomy, team orientation, shared leadership, redundancy, and learning. Regarding the first element *autonomy*, Moe et al. (2008) differentiated between three types of autonomy: external autonomy, internal autonomy and individual autonomy. External autonomy was defined as "the amount of autonomy a team has with respect to the rest of the organization", internal autonomy as the "internal organization of the work the team has", and finally individual autonomy as "the amount of freedom for a team to organize their own tasks" (Moe et al., 2008). The second element described by Moe et al. (2008) is *team orientation.* Team orientation is explained as: "the fit between team and individual goals". Furthermore, the definition of the third element *shared leadership* was: "assigning the leadership role to the one(s) with the accurate skills and knowledge for the particular project". The fourth element *redundancy* implies that the several team members should be able to take over each other's' roles. Lastly, the element *learning* is needed for the element redundancy, so that team members can constantly learn from each other (Moe, Dingsøyr & Dybå, 2008).

Karhatsu, Ikonen, Kettunen, Fagerholm and Abrahamsson (2010) used these five main concepts found by Moe et al. (2008) to construct a model to build self-organizing teams based on empirical evidence. The two major components they found to successfully implement a self-organizing Agile team were 'autonomy' and 'communication and collaboration'. These two components were used to form the foundation of building blocks on how to construct successful self-organizing teams. Karhatsu et al. (2010) defined communication as "sending and receiving information" and collaboration as "actively working together to deliver a work product or make a decision" (Karhatsu et al., 2010, p. 2). Thus, Karhatsu et al. (2010) merged all the five elements found by Moe et al. (2008) into 'building blocks' and extended these newly formed building blocks with a new one, namely: 'communication and

collaboration'. Whilst testing the above mentioned building blocks in practice, Karhatsu et al. (2010) found some practical tools and elements for all these building blocks to make the self-organizing Agile team work. A visual representation of these elements and building blocks can be found in Figure 1.

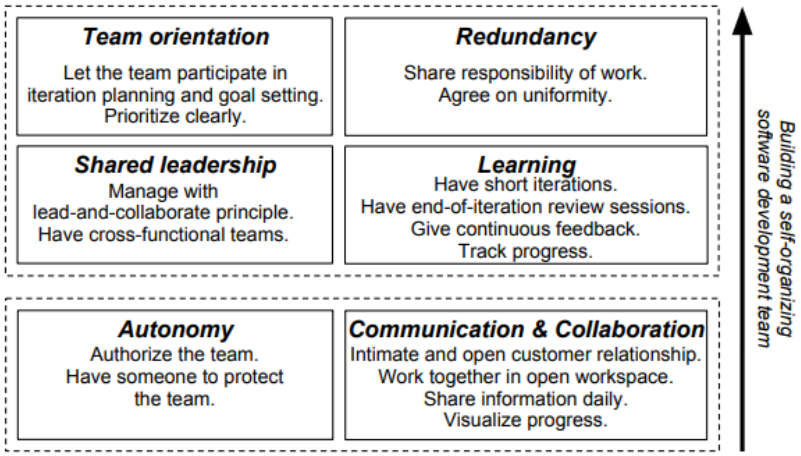

Figure 1. A framework for building a self-organizing software development team. The arrow indicates the building direction: foundational elements must be in place first. Reprinted from "Building Blocks for Self-Organizing Software Development Teams: A Framework Model and Empirical Pilot Study," by H. Karhatsu, 2010, *Software Technology and Engineering (ICSTE)*, Vol. 1, p. 300.

These two above mentioned models can be used when implementing self-organizing Agile teams within (software-development) organizations. The first conceptual model constructed by Moe et al. (2008) was empirically tested by Karhatsu et al. (2010) within a software development organization. They made the conceptual model more tangible and gave several practical tools and elements to build successful self-organizing Agile teams within an organization. The aspect 'autonomy' was mentioned multiple times and, as found in the first paragraph, is also very important in defining these teams. Therefore, in the paragraph below, the amount of autonomy and leadership, how to manage these, and which barriers can exist in self-organizing Agile teams regarding autonomy will be further investigated.

2.2.2. Leadership and autonomy

As mentioned above, Moe et al. (2008) stresses the importance of the right amount of autonomy within the self-organizing Agile teams in order for them to be successful. It was emphasized that internal, external and individual autonomy should be balanced to prevent the teams from failing (Moe et al., 2008). Additionally, Balkema and Molleman (1999) try to solve the issue of local autonomy in self-organizing Agile teams by explaining the principle of minimal critical specification. The 'minimal critical specification' is about defining as little tasks as possible within a team but providing just enough guidance and rules to make sure that employees know their core task but maintain the ability to individually contribute. The management defines the critical factors, but according to their skills and

experience, the employee gets autonomy to perform and design their own job. Karhatsu et al. (2010) also found that a self-organizing Agile team should be able to influence important decisions and that they should have substantial freedom. They, however, also emphasise that there should still be slight control and regular checkpoints initiated by the management.

Besides the amount of autonomy and its barriers, the kind of leadership present in a self-organizing Agile team was found to be an important element in both the definitions mentioned in the paragraph above and in literature found on these teams (Moe, Dingsøyr & Dybå, 2008; McHugh, Conboy, & Lang, 2012; Kuipers, van Amelsfoort, & Kramer, 2010; Castiglione, 2007). Regarding the checkpoints established by leadership, Kuipers, van Amelsfoort and Kramer (2010) found that depending on the organization, the leadership role will be different. Some will have more senior team members who can take over most of the tasks, whereas other teams do need an external coordination which will be the final contact point for the team when they cannot manage a task themselves. In every situation however, the management or supervisor will need to get another attitude towards the Agile teams and its members. This implies that their original steering role will change towards a more supporting, coaching role (Kuipers et al., 2010).

A differentiation can be made between leadership tasks within the team and outside the team. Within teams, leadership can be seen as function of the team, which implies that it is necessary, but not bounded to one particular formal position. The way this function is designed, will depend on the team composition (Kuipers et al., 2010). The main tasks of the internal leadership role should be to serve as the internal coordinator or mentor who is the contact point to external matters. The external leadership role will be a more coaching role from the outside to the several teams. These coaches should inspire and motivate the several teams within an organization (Kuipers et al., 2010). A study concerning external leadership in self-managing work teams even shows that external managerial support is the key driver of successful self-organizing teams (Castiglione, 2007). Even though the element of both internal and external leadership was not included in the model of Karhatsu et al. (2010), this seems to be one of the most important elements found in literature to make the self-organizing teams succeed. Though there is no right or wrong way to implement the leadership role, one should consider how the self-organizing Agile teams are composed. By doing this, the organization can fit the leadership style to the teams to contribute to their optimal performance.

2.2.3. Communication and trust

Additional to the building block ‘autonomy’, the building block of ‘communication and collaboration’ was constructed in the model of Karhatsu et al. (2010). The importance of communication was also mentioned by many other researchers (Moe, Dingsøyr & Dybå, 2008; Cockburn & Highsmith, 2007 and Hoda, 2011; Kuipers et al., 2010). Kuipers et al. (2010) found that because of some obstacles, like bureaucratic structure or geographical separation, some formal procedures regarding this topic are necessary in order to make these teams succeed. Different forms of

communicating are mentioned by Kuipers et al. (2010), like autonomous relations, where there are direct contact patterns between the several contact persons. For meso and macro connections routine procedures can be used, like the KANBAN-system, or a community of practice can be formed (Kuipers et al., 2010; Wenger & Snyder, 2000). Furthermore, some elements within the organization should be standardized to guide the teams. Vertical connections – which are the connections between the management and the rest of the company – can be standardized by autonomous relations or periodic communication of strategic concern, like conferences. Furthermore, the need for an overcharging platform or sort of intranet communication system, continuous communication between the teams and at least monthly meetings are stressed by multiple researches (Kuipers et al., 2010; Cockburn and Highsmith, 2001).

One of the most important factors found in literature to make several teams communicate clearly both internally and externally is trust (McHugh, Conboy & Lang, 2012; Moreira, 2013; Hoda, 2011; Cockburn & Highsmith, 2001; Lewicki, McAllister, & Bies, 1998). It can be said that when team members do not trust each other, knowledge sharing and giving continuous honest feedback to each other will not happen in the right way (McHugh, Conboy and Lang, 2012). Additionally, Hoda, Noble and Marshall (2011) found trust and shared mental models to be of fundamental importance for self-organizing Agile teams to be successful. It is therefore important to make sure that before self-organizing Agile teams are implemented within an organization, the team members have had several sessions together in which this trust among them is created.

2.3. Barriers for self-organizing Agile teams to succeed

Though many elements that should be present in an organization to make self-organizing Agile teams succeed are mentioned above, literature also mentions several barriers and boundaries that prevent an organization to successfully implement these teams.

Moe et al. (2010) found three barriers for successfully implementing self-organizing Agile teams. The first barrier arises when there is a lack of internal autonomy, which causes a lack of backup behaviour in the team. Hoda (2011) acknowledges this by stating that teams should balance between cross-functionality and specialization. This implies that team members need to have the ability to look beyond their area of specialization, to ensure backup behaviour within the teams. The second barrier results from a surplus of individual autonomy, which creates a lack of team orientation. The last barrier found by Moe et al. (2008) was when a team has an excessive amount of external autonomy, in which the team does not identify with the project, since they feel that it only reflects external demands. In order to overcome these barriers, Moe et al. (2008) state that there is a need for balance in both external-, internal- and individual autonomy.

Balkema and Molleman (1999) also did research on which barriers exist that prevent self-organizing Agile teams to develop. They found four categories of barriers to self-organization within companies. The first barrier was defined as management resistance, since the leadership role will change in a self-

organizing structure to a more facilitating and coaching role. Therefore, leaders in the current structure may resist to this new approach. The second barrier found was the existence of bad attitudes among employees, which has to do with the various psychological needs of employees, which in a self-organizing structure may not be all realized. Furthermore, the skills and learning abilities of the employees was described as third barrier, in which a differentiation was made between technical skills and social skills (Balkema & Molleman, 1999). Lastly, the actual need for self-organizing teams for the organization was marked as barrier. Whether the teams are just a desire from organizations to go along with the upcoming trend, or because the need for more flexibility is present within an organization is something that should be analysed before the actual implementation of the teams. This last barrier was found to be the most crucial.

2.4. The implementation of self-organizing Agile teams in a network regime

Since the elements mentioned above are mostly reasoned from a context where large bureaucratic organizations want to become more flexible, it is also important to find out which elements would be more, less or equally important when implementing self-organizing Agile teams in a flexible organization. To expound on this, first of all, the law of requisite variety will be explained below. After that, literature about the way to implement self-organizing Agile teams within a network regime will be presented.

2.4.1. The law of requisite variety

Agile working requires an amount of self-organization of an organization and its members (Highsmith & Fowler, 2001; Moreira, 2013; Hoda, 2011; Hoda, & Murugesan, 2016; Hoda, Noble, & Marshall, 2012; Hoda, Noble, & Marshall, 2013; Castiglione, 2007; Karhatsu et al., 2010). Therefore, when implementing an Agile way of working containing self-organizing Agile teams, Kuipers et al. (2010) explain Ashby's 'law of requisite variety'. Ashby's law of requisite variety determines the level of self-organization an organization can have. The law of requisite variety claims that the level of self-organization of an organization has to be contingent with the level of environmental variety of an organization (Kuipers et al., 2010). Therefore, if the environment an organization is operating in is more dynamic and requires much change and adaptation, it is likely that the level of self-organization will also be higher, since more and faster adaptation and communication with customers is needed. Thus, one could argue that a flexible organization would require a higher level of self-organization than a bureaucratic organization.

2.4.2. Implementation of self-organizing Agile teams in a 'network regime'

Considering the law of requisite variety explained above, Kuipers et al. (2010) made a differentiation between three main organizations ('regimes'). First of all, the bureaucratic regime, in

which much formal detailed procedures can be found and where is much steering from management (stable environment). Second of all, the flexible regime is mentioned, in which a minimal division of labour is stressed. The flexibility in this regime does know boundaries within the basic structure (more dynamic environment). Lastly, a network regime is distinguished which strives for as less as possible architecture on macro and meso level (very dynamic environment). A network regime is capable of being very flexible and adapting very fast to its environment in a self-organizing way. A network regime is mostly dynamic and also operates in a dynamic environment, which implies that they have to adapt faster than normal organizations. One characteristic of a network regime is that it is a small organization which employs between twenty and two hundred people. Furthermore, it has a formal network structure and some flexible rules and procedures which match the dynamic environment (Kuipers et al., 2010). These can be seen as minimal critical rules, which are the basic procedures to fall back on. This element was also found in the general literature for implementing self-organizing Agile teams (Balkema & Molleman, 1999).

When implementing self-organizing Agile teams in a self-organizing network regime, Kuipers et al. (2010) state that it is very important to have continuous coordination from different capacity sources (not from one central source). This should be arranged in this manner because of the fluctuating processes which are hard to plan beforehand. Kuipers et al. (2010) therefore emphasize that when self-organizing Agile teams are implemented in a network regime, it is necessary to decentralise leadership roles. The leadership roles should be divided within the organization and are mostly needed for giving direction, supervision or monitoring and coordination. It is important that these leaders have a coaching instead of a steering role, which was also found in the general literature about the implementation of self-organizing Agile teams (Balkema & Molleman, 1999; Kuipers et al., 2010). This leadership role can be taken on by everyone who is trusted and respected by the members of the network regime, which also fits the idea of shared leadership found in the general literature on self-organizing Agile teams (Karhatsu et al., 2010; Moe et al., 2008; Kuipers et al., 2010; Castiglione, 2007). However, it was found that some central steering is needed as well (Kuipers et al., 2010; Castiglione, 2007). Management should take care of the development, maintenance and innovation of the vision and mission, which form the foundation of the network (Kuipers et al., 2010). Furthermore, Kramer et al. (2010) state that within the network regimes it is very important that everyone has a great amount of individual responsibility, which fits the idea of autonomy in the general literature (Moe et al., 2008; Karhatsu et al., 2010).

Furthermore, the element of communication when implementing self-organizing Agile teams in a network regime was mentioned by Kuipers et al. (2010). Since the network regimes are small organizations, the team members know each other personally and therefore the knowledge sharing can be informal and based on trust. However, when an organization is growing, an overarching platform that every member of the organization can access, like an intranet, should offer enough information. Kuipers et al. (2010) stress the importance in network regimes to have accessible intranet systems, to

bring together different sources of knowledge and continuous meeting opportunities between people in terms of physical location, informal meetings and open information systems which are accessible for everyone. The importance of communication and trust was also found in the general literature (Hoda, Noble, & Marshall, 2011).

Kuipers et al. (2010) additionally mention that self-organizing Agile teams within a network regime mostly contain four till seven team members, since these network regimes mostly imply complex projects in which fast decision making is needed. Therefore, it is important for these networks to invest in team collaboration and composition skills. The teams formed within the network regimes are also continuously changing to other combinations. These teams are therefore not fixed but can change per project. The team composition was something that was not mentioned in general literature on self-organizing Agile teams. The way in which self-organizing Agile teams are constantly changing in network regimes was also not mentioned in general literature. This therefore seems to be something especially relevant for organizations operating in a flexible environment. The element of team collaboration, however, was mentioned multiple times in general literature, which implies that this element should be kept in mind when implementing self-organizing Agile teams in both bureaucratic as flexible organizations (Karhatsu et al., 2010; Moreira, 2013; Moe et al., 2008).

Taken together, as in general literature regarding the implementation of self-organizing Agile teams within bureaucratic organizations: leadership, autonomy, communication and trust are aspects that are also important when implementing these teams in network regimes according to literature. However, the composition of the team and making flexible and not fixed teams is something that seems especially important for flexible organizations (Kuipers et al., 2010).

2.5. Summary

Many concepts that are similar to self-organizing Agile teams are found within the literature. Since teams in general are already thoroughly researched, already existing concepts interconnected to self-organizing Agile teams are used simultaneously. The most frequently detected synonyms for Agile teams in literature were ‘self-organizing teams’, ‘Scrum teams’, ‘self-managing teams’, and some concepts clearly focussed on the software development context. Literature was found to be inconclusive about the main characteristics of Agile teams, nevertheless the aspect of self-organization was expressed in all definitions. The teams were found to coordinate the work themselves, but to need some external guidance in order to optimally perform. The main difference found between self-organizing teams and Agile teams, is that Agile teams are operating in an Agile environment, using methods like Scrum. Since the most important characteristic found in all definitions of Agile teams is the fact that they are self-organizing, the concept used throughout this research will be ‘self-organizing Agile team’.

Regarding the elements that should be present within organizations to make self-organizing Agile teams succeed, the five elements autonomy, team orientation, shared leadership, redundancy, and

learning were found (Moe, Dingsøyr and Dybå, 2008). These elements were eventually merged into building blocks in which the foundation building block of 'communication and collaboration' was added as well (Karhatsu et al., 2010). Together with autonomy, these two building blocks were stated to be the major elements to be present in an organization in order to make self-organizing Agile teams successful.

Furthermore, to make self-organizing Agile teams successful in organizations, the balance between internal, external and individual autonomy was stressed (Moe et al., 2008). Moreover, assuring minimal critical specification within organizations was emphasized to assign the teams enough autonomy, yet also have some formal minimal rules to fall back to (Balkema & Molleman, 1999).

Regarding leadership, it was found that depending on the composition of task and seniority in the teams, leadership should be shared or appointed (Kuipers et al., 2010). However, the literature agrees that the leadership role should be present and should change from a steering role towards a coaching role. A distinction was made between internal and external leadership. Though there is no right or wrong way to implement the leadership role, one should consider how the self-organizing Agile teams are composed so that the leadership style will fit these teams to make them optimally perform.

The element of communication was also frequently mentioned in literature to be an important element for self-organizing Agile teams to succeed (Moe, Dingsøyr & Dybå, 2008; Cockburn & Highsmith, 2007 and Hoda, 2011; Kuipers et al., 2010). Tools like an overarching intranet and communication between teams in terms of meetings were mentioned. An important element to make continuous communication work was found to be trust. Therefore, teams should have regular meetings before working together to know what to expect from each other and trust each other (McHugh, Conboy & Lang, 2012; Moreira, 2013; Hoda, 2011; Cockburn & Highsmith, 2001).

Also, the barriers for implementing self-organizing Agile teams like a bad balance of autonomy, management resistance, employees' attitudes, skills and learning abilities and the actual need for the implementation of self-organizing Agile teams was stressed (Balkema & Molleman, 1999).

When looking at implementing self-organizing Agile teams within a network regime, the law of requisite variety shows that there should be a higher amount of self-organization within these organizations in comparison to bureaucratic organizations. It was found that the elements leadership, autonomy, communication and trust seem to be the most important success factors as also found in literature about bureaucratic organizations. However, the success factor team composition was found to be an important element specifically for network regimes.

Chapter 3. Methods

Now that the definition of self-organizing Agile teams has been made clear and several success factors and barriers have been identified from literature, the second part of the research question 'which success factors and barriers can be identified when implementing self-organizing Agile teams within a

network regime operating in a non-software development environment?' will be empirically tested. This chapter will elaborate on the methods used to conduct the empirical research.

3.1. Company background

The company researched for this study is operating as an international Human Resource and leadership development consulting firm. The company has been growing significantly the last sixteen years, currently employing more than seventy people spread out in offices in Germany, Brazil, Turkey, the United States and Hong-Kong. The German office (operating in Bamberg) is the biggest by far, currently employing sixty-three people. For this research, only the German office was researched. From the sixty-three people employed in the Germany, a few work from home or remotely (Berlin, London). Furthermore, the employees are spread out in four offices all located in different offices in Bamberg. The company's mission is to help their clients achieve excellence by aligning personnel and leadership development with their corporate strategy, which is done by creating separate programs for their various customers. These programs are developed in the separate product areas People and Organizational Development, Talent and Selection, and Talent Development. These separate programs are first designed by a design team, who is working across all product areas. The content of the programs is then given to the specific program manager who delivers the program on location, supported by a program coordinator who is responsible for the facilitation of the project. Furthermore, the company employs key account managers who are carrying a customer facing role. He or she is the primary contact person for a 'key account' and is responsible for every activity with this specific customer in all product areas. Next to that, the Crew Lead is the main person of contact for the employees within one product area. He or she is responsible for the development of the employees within either People & Organizational development, Training & Selection or Training & Development.

In the beginning of January 2018, the company realized that their organizational structure did not allow them to respond to customer requests as efficiently as they could and that it had a negative impact on employee engagement at the same time. Above that, a couple of employees executing key roles within the company had left. Therefore, it became almost impossible to keep operating according to their current structure. Thus, the need arose to change their organizational structure to a structure revolving around self-organizing Agile teams. [3] The change towards this new structure was planned to be done in an organic way, by implementing the several self-organizing Agile teams stepwise. By means of implementing a structure revolving around self-organizing Agile teams, the organization also tried to solve the ongoing problems of the lack of team feeling, structure and

[3] Retrieved from A Recommendation on How to Successfully Implement Self-Organizing Teams in atrain, Project Report, den Hartog, K. & Billen, Y., 2018

knowledge sharing. Also, by making the self-organizing Agile teams cross-functional, the organization hoped to be able to offer a more holistic solution to their clients.

Since the organization operated in a dynamic environment, the organization had to be flexible and had to adapt fast to changes in the labour market and to customer needs. Additionally, a high amount of freedom, autonomy and need for pro-activity was asked from the employees working in the organization. Furthermore, the company was small, employing only sixty-three people. Since these are all main characteristics of a network regime, it was concluded that the organization could be defined as network regime. Moreover, the network regime was not operating in a software development environment, which developed difficulties finding out how they had to implement self-organizing Agile teams within their company.

Thus, by doing research while and after the network regime implemented the self-organizing Agile teams, the research question: 'How can Agile teams be clearly defined and which success factors and barriers can be identified when implementing these teams within a network regime operating in a non-software development environment?' was examined. This was done by performing internal research from May until July and by conducting an additional interview and survey after the implementation of the teams.

3.2. Research Approach

To find the success factors and barriers for implementing self-organizing Agile teams within a network regime, a qualitative research approach was chosen. Qualitative research is aimed at collecting and interpreting spoken material and based on that, making statements about a phenomenon in reality (Bleijenberg, 2015). Since not much empirical research was yet done on this topic, new and broad information on several topics should be collected. Thus, a qualitative approach was chosen to provide new information. This research was an explorative study, in which new information about possible success factors and barriers found when implementing self-organizing Agile teams within a network regime operating in a non-software development environment was explored. Literature was used to provide some guidelines. However, qualitative research enabled the researcher to come up with new information as well. In this research, the opportunity arose to use different forms of qualitative methods: interviews, the usage and analysis of several internal documents and a qualitative survey conducted five months after doing the internal interviews. These various methods were either inductively or deductively analyzed. The several methods and analysing techniques are listed in Table 1 below.

Table 1. Qualitative methods and ways of analysing

Qualitative method	*Analysing technique*

Internal interviews	Inductive
Additional interview	Deductive
Document analysis	Inductive
Qualitative survey	Deductive

The self-organizing Agile teams were organically implemented from June until the end of July, which made it interesting to use several moments to measure the degree of success of the implementation of self-organizing Agile teams and to find success factors and barriers contributing to the successful implementation.

The first measurement was done in May and June in which a global analysis of the network regime was done by means of interviews. Several positive and negative characteristics of the organization were found. Moreover, opinions about the implementation of the self-organizing Agile teams and possible barriers encountered by employees were discussed. In July, an intervention was performed to support the organization with a framework considering which structures and elements were needed to make the self-organizing Agile teams successful. Subsequently, the second measurement was done four months later, by means of an additional interview conducted with two employees involved in the process of the implementation of the self-organizing Agile teams. Lastly, the third measurement was done one month after this interview. This measurement was a survey including questions to find possible success factors, barriers and characteristics of the network regime. This survey was send to the whole organization. These last two measurements were performed to find out whether the implementation of the self-organizing Agile teams was found to be successful. This was measured by asking several questions about the improvement of previous found challenges in the network regime that drove them to implement the self-organizing Agile teams. Next to that, the second and third measurement were done to find out which elements within the network regime contributed to the successful implementation of the self-organizing Agile teams and which elements were found to obstruct the teams to be optimally implemented.

The research was conducted within a timeframe of six months, which therefore made it a longitudinal research. By conducting a longitudinal research, the whole process of implementing self-organizing Agile teams could be tracked and analysed. The methods used will be further explained in the following paragraphs.

3.2.1. Interviews

Interviews have become a primary way of gathering information and getting to know people (Symon & Cassell, 2012). A limitation found for interviews is that they are relatively subjective and therefore susceptible to interpretation. However, since in-depth information and experiences from employees were needed within this study, this approach was chosen. First of all, an in-depth analysis of the organizations' strengths and weaknesses was executed to find possible success factors or barriers for the implementation of the self-organizing Agile teams within the network regime. Hence, possible barriers could already be encountered which might obstruct the teams from being successfully implemented and success factors could be determined. To gain as much information as possible about the strengths and weaknesses of the network regime, interviews were conducted within this research to gain in-depth information. Furthermore, respondents were asked which characteristics of the network regime they reckoned be possible success factors or barriers for the implementation of self-organizing Agile teams. By asking non-leading, open questions, the employees could give a thorough and non-biased picture of the possible success factors and barriers within the network regime during the interviews.

Employees operating in all different job functions were interviewed within this research. These job functions include the CEO, Key Account Managers, Senior Consultants, Program Managers, Program Coordinators, Crew Leads and members from the Design Team. Since all job functions eventually operating in the self-organizing Agile teams were represented, a good representative sample was formed. Employees operating in the IT, Finance or HR department were not interviewed, since the organization chose not to include these employees in the self-organizing Agile teams. This was decided because these departments were too small, and the tasks performed by these employees were not able to be combined in cross-functional teams with the different job functions and tasks performed by employees in the core business.

A total of sixteen interviews were conducted. Fifteen internal interviews before and during the implementation of the self-organizing Agile teams and one additional interview four months after the implementation of the first self-organizing Agile team. This last interview, interviewing two employees involved in driving the implementation of the self-organizing Agile teams, was done for two reasons. Firstly, to find out whether the implementation of the self-organizing Agile teams had been successful. Secondly, to discover elements contributing or obstructing the self-organizing Agile teams to optimally perform.

Semi-structured interviews were used, in which the formulation and sequence of the questions is fixed in advance (Bleijenbergh, 2015). In this research, the questions asked were formulated beforehand. However, when a topic needed more attention or more information could be gathered regarding one topic, the questions could be adapted. The fixed questions generate aligned answers from different employees. Hence, different interviews could be easily analysed and compared. Some standard questions like: 'What are the current challenges in your job?' and: 'What do you see as challenges when implementing the self-organizing Agile teams within this organization?' were asked. Depending on the answers of interviewees, more in-depth questions were asked. Information on the topics leadership, autonomy and the composition of the teams was also gathered by asking open questions to gain a full picture of the network regime before the implementation of the teams. For an exhaustive list of the interview questions, see Appendix 1.

All interviews were recorded and transcribed directly from the audio recording. The transcripts of the interviews can be found in Appendix 2. To find the overall success factors and barriers encountered in the organization before the implementation of the teams, the data gathered from the interviews was first analyzed in an inductive way. This process is described in the paragraphs below. Inductively analyzing enabled the researcher to go from empirical data to actual knowledge and it enabled to find several patterns that could answer the research question (Strauss & Corbin, 1994; Gioia, Corley & Hamilton, 2013).

First of all, the transcribed interviews were analyzed by giving each relevant sentence or quote a certain code. These codes stayed very close to what had been said by the interviewees. After, important codes from each interview were selected and structured. Afterwards axial coding was used, in which subcategories were formed out of the already obtained codes (Strauss & Corbin, 1994; Gioia, Corley, & Hamilton, 2013). Subsequently, selective coding was done, in which the core categories were obtained and specified, and overlapping codes were deleted. In this way the codes were merged into a few main variables, which fitted best with the content of the quotes. Within selective coding, explanations instead of only descriptive codes were tried to be described (Strauss & Corbin, 1994; Gioia, Corley & Hamilton, 2013).

The process was iterative, meaning that it has been a continuous process of adjusting the codes and appointing different codes. The process of coding and making different key codes was done multiple times. First to analyze the global barriers encountered within the company, second to find the global success factors within the organization and lastly to create an overview about the various understandings and challenges encountered for the implementation of the self-organizing Agile teams within the network regime. By means of analyzing these elements, an answer to the question on which success factors and barriers found for implementing self-organizing Agile teams within a network regime was studied.

After six months, the additional interview was conducted and analyzed. Since prior information from the interviews and literature were taken into account, the interview was coded deductively. A code

tree was created in which the key success factors and barriers found in literature and prior interviews were included. This code tree can be found in Appendix 3. The categories autonomy, team orientation (shared) leadership, redundancy, learning, communication, management resistance, employees' skills and learning abilities and the actual need for self-organizing Agile teams were analyzed.

3.2.2. Document analysis

Several documents obtained from the organization were analyzed. First, during the internal research, several documents and scientific researches regarding self-organizing Agile teams and Agility were provided by the network regime. Since the organization's' core business is HR consultancy, many documents were already analyzed and researched by the network regime and could therefore also be used in this study. The documents regarding information about several HR topics were stored in the online knowledge base from the network regime, called Egnite. Many documents about self-organizing Agile teams and Agility in general were found and analyzed throughout time. The most important documents were analyzed by reading and marking the most important phrases.

Second, a document with information about the intervention was obtained. Information about the new organizational structure and measures that were taken to support the successful implementation of the self-organizing Agile teams were written down in this document. Therefore, it could be identified which barriers and success factors were addressed during the intervention. Hence, it could be analyzed whether these elements really contributed to the successful implementation of the self-organizing Agile teams in a network regime.

3.2.3. Post-survey

Lastly, a survey was sent out to the organization three months after the implementation of all self-organizing Agile teams. The survey was send to all sixty-three employees in the organization, from which the response rate was 12,7%. The survey was send to all the employees, in which no differentiation was made between the employees working in a self-organizing Agile team or employees from the departments not included in these teams. This was due to the fact that this information was not provided. An exhaustive list of email-addresses which did not differentiate employees operating and not operating within the self-organizing Agile teams was available. The post-survey was conducted after the implementation of all the self-organizing Agile teams to find which characteristics and elements of the organization contributed to or obstructed the self-organizing Agile teams from being optimally implemented. In this way, an answer to the second part of the research question 'which success factors and barriers can be found when implementing these teams within a network regime operating in a non-software development environment?' was examined.

The survey contained twenty-eight questions which were focused on both the success factors and barriers found in theory as the strong and weak characteristics of the network regime resulting

from prior interviews. Furthermore, questions were formulated to find whether the priory detected strong and weak characteristics of the network regime were improved. This was done to ensure the degree of success of the self-organizing Agile teams.

From the questions in the survey, fifteen were open questions, ten were yes/no/other questions, in which the 'other' option made the questions exhaustive, and three questions were questions with several options. An example of an open question was: 'What elements in the organization made that the implementation of self-organizing teams was (not) successful?' An example for a yes/no/other question was: 'Can members of the team take roles of other members when needed?'. An example of a question with several options was: 'The main challenges the company faced before implementing the self-organizing teams, found in the research done by the EHRM students, are stated below (1-7). Which of these aspects have improved since the implementation of the self-organizing teams and which can still be improved? (options below)'.

The data gathered from the survey was deductively analyzed, meaning that several elements found in literature were used to analyze the data. The key success factors and barriers of autonomy, team orientation, (shared) leadership, redundancy, learning, communication, management resistance, employees' skills and learning abilities and the actual need for self-organizing Agile teams as found in literature were analyzed and compared to the data gathered. Furthermore, additional elements mentioned by the employees that were not found in the literature or prior interviews were used to find additional success factors or barriers that should be accounted for when implementing self-organizing Agile teams within a network regime.

3.3. Research ethics

The researcher was operating internally in the network regime from the period of May until July. During this period, multiple interviews were conducted. Before conducting the interviews, all respondents were asked whether they wanted to participate in the interviews and a date and duration of the interviews was arranged together between the researcher and respondent. Within the correspondence before the arrangements of the interviews, it was stated that the employees were not obliged to participate in the research and they could withdraw from the research at any time. Before the start of the interview, it was asked whether the respondent agreed to record the interview and anonymity was guaranteed, so that the respondents could give honest answers. The researcher tried to make the respondents feel comfortable by first asking about the condition of the respondents before asking substantive questions. Furthermore, the research goal and the eventual output of the research were shared with the respondents before the actual interview started. The respondents were always addressed politely and personal questions were avoided. Information shared in the interviews was never shared with other respondents.

To ward for anonymity, the survey could be filled in on an online form which did not require a name. A short introduction of the survey showed the research goal again and gave gratitude to all

respondents. It was stated in the introduction that participation was not obliged. It was stated in the introduction of the survey that the report, drawn from the research, would be send to all respondents interested, so that possible recommendations could be taken up by the network regime.

Chapter 4. Results

The first half of the research question 'How can Agile teams be clearly defined' was answered in chapter two. In this chapter, the second part of the research question '*Which success factors and barriers can be identified when implementing self-organizing Agile teams within a network regime operating in a non-software development environment?'* will be answered by means of analysing the gathered data. To come up with results for the second part of the research question, it first had to be concluded whether the implementation of the self-organizing Agile teams within the network regime was successful or not. After concluding whether the implementation was successful or not, elements that might have contributed to this successful implementation (success factors) or elements that might have obstructed the teams from being successfully implemented (barriers) will be analysed.

Initially, the self-organizing Agile teams were implemented within the network regime to solve the problems of the lack of: (face-to-face and cross-organizational) communication and team feeling. Moreover, a reduction of the workload and offering a more holistic solution to the customers were desired by means of implementing the teams. Additionally, by means of a global analysis of the organization before the implementation of the self-organizing Agile teams, a lack of structure and an abundance of autonomy were detected as other weaknesses within the organization.

The overall strengths of the network regime were found to be the empowerment culture which included freedom and flexibility in the jobs and the supporting colleagues.

Moreover, various understandings about the self-organizing Agile teams and challenges for the implementation of these teams were encountered by employees. Challenges encountered were the lack of communication and structure, which led to confusion among employees about the composition of the teams, which roles and responsibilities should be taken on within these teams and how the leadership role should be divided within the teams.

By conducting the survey, questions were asked to investigate whether the situation before implementing the self-organizing Agile teams was improved after the teams were implemented to ensure the degree of success in the implementation. This will be further explained in the section below.

4.1. Degree of success in the implementation of self-organizing Agile teams

As stated before, the self-organizing Agile teams were implemented in the network regime to solve the problems of the lack of team feeling, reducing the workload, improve (cross-organizational and face-to-face) communication and to create a more holistic solution to the customer. Therefore,

these elements were questioned within the survey to find out whether these elements had improved after the implementation of the self-organizing Agile teams. By means of this information, it could be concluded whether the implementation of the teams had been successful. It appeared that the communication in terms of face-to-face communication had improved after the implementation of the self-organizing Agile teams. 71,4% of the respondents found that the lack of face-to-face communication within the organization had improved by moving closer together. Also, the implementation of structural meetings led to a better communication after the implementation of the teams. However, regarding the overall communication, only 42,9% of the respondents stated that this element had improved and 28,6% mentioned that there was still room for improvement. It appeared that the topics cross-organizational communication and communication tools were still to be improved.

100% of the respondents stated that the team feeling had improved after the implementation of the teams. Whereas before the implementation of the teams, many respondents emphasized the lack of team feeling:

'Yes, I belong to this product team, but there is not this feeling of belonging. It is a little bit missing, people are feeling like they have everything on their shoulders.' (Respondent 2)

'Do we have to reorganize our meetings, to get like this team spirit, because I don't have that. I don't know what another person is doing somewhere right.' (R5)

After the implementation of the self-organizing Agile teams, the team feeling had greatly improved:

'*I have less the feeling of being alone'* (R1 survey)

'More Feeling of belonging to a Team.' (R2 survey)

Next to that, 87,5% of the respondents found that trust had improved within the organisation, which leads to back-up behaviour among team members. Before the implementation of the self-organizing Agile teams, respondent 3 stated:

'If I am ran over by a bus, we would have a big problem. So we need to find a way that there is some sort of safety net, a back-up.'

After the implementation, 100% of the respondents in the survey answered the question: 'Can members of the team take roles of other members when needed?' with yes. Therefore, the amount of back-up behavior within the organization had clearly improved. Moreover, 57,1% of the respondents mentioned that the overall structure within the organization had improved. However, it was also frequently mentioned that even though more structure was applied within the network regime, this was still something to be further improved. Regarding the workload, 50% of the respondents replied that the workload was (very) fine. However, 25% stated that their workload was fine at the moment, but they doubted whether this would stay this way in the near future, and 25% stated that they had a (very) high workload. Before the implementation of the self-organizing Agile teams, a high workload was also mentioned frequently.

'And there is also this emotional workload on top that influences everything.' (R2)

When comparing the situation before and after the implementation of the self-organizing Agile teams, results show inconclusive on whether the workload was decreased after the implementation of the teams. Some respondents mentioned that their workload was decreased, whereas others stated that this was still an element to be improved.

Regarding the goal to support customers with a better holistic solution, it appeared that even after the implementation of the self-organizing Agile teams, room for improvement remained. Even though the survey showed that 57,1% of the respondents was already working in cross-functional teams, many respondents mentioned that the transfer from teams within one division to cross-functional teams was difficult.

Overall, the team feeling, creation of back-up behaviour, and some parts of communication and structure had improved, which leads to the conclusion that the self-organizing Agile teams within the network regime were successfully implemented. Even though room for improvements on some parts of structure, cross-organizational communication and workload remains, the overall situation of the network regime had improved after the implementation of the self-organizing Agile teams.

During the implementation of the self-organizing Agile teams, some elements in the organization were manipulated by means of a planned intervention initiated by the management to ensure the successful implementation of the teams. Aspects that were manipulated were the overall structure of the network regime, roles within the teams, leadership and some aspects of communication.

The interventions will be explained in the paragraph below to give a clear view on what elements were manipulated to make them contribute to the successful implementation of the self-organizing Agile teams. After, all the success factors and possible barriers for the implementation of the self-organizing Agile teams within the network regime will be discussed and compared to literature. Lastly, a conclusion on which elements can be seen as either greatest success factors or barriers for the implementation of self-organizing Agile teams within a network regime will be drawn.

4.2. Interventions within the network regime during the implementation of the self-organizing Agile teams

As resulted from the internal interviews, much confusion existed among employees regarding the self-organizing Agile teams before they were implemented. The composition of the teams, division of roles and responsibilities and the interpretation of the leadership role within the self-organizing Agile teams were not clear.

Therefore, during the implementation of the self-organizing Agile teams, a planned intervention was initiated by the management within the network regime. By means of this intervention, several practices and structures were implemented within the network regime. This was done to create more clarity among employees and to support the process of successfully implementing

the self-organizing Agile teams. The following practices and structures were added to the network regime to ensure the successful implementation of the self-organizing Agile teams.

4.2.1. Structure

Initially, a visualization on the new structure revolving around self-organizing Agile teams was created (Figure 2). Within this structure, three layers were created. Within the first layer - the customer facing layer - the self-organizing Agile teams were positioned. The second layer included the business functions and the last layer consisted of the management functions.

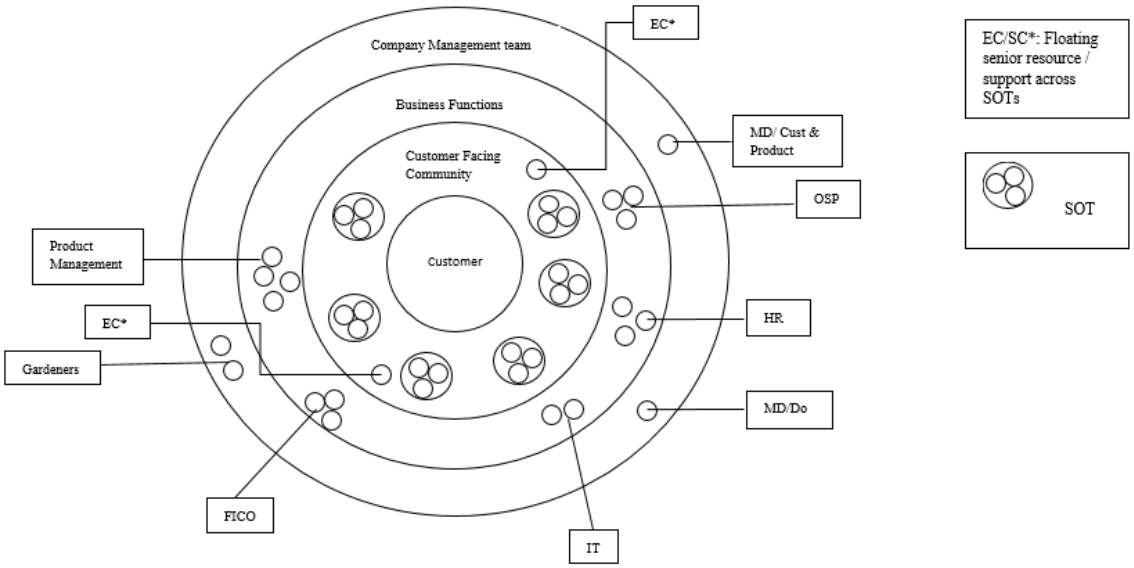

Figure 2. New organizational structure revolving around self-organizing Agile teams

Additional to the creation of this new organizational structure, rules and structures around the autonomy and responsibility for the teams were created to support the self-organizing Agile teams. This was done by creating an organizational system, in which self-organizing Agile teams got the responsibility to keep track of their own targets. Whenever a team did not meet their target, first, they had to try to solve this problem within the team by means of team reflections and team meetings. Whenever this was not possible, they could ask guidance and support from the newly created external leadership role, which was called ‘the gardener’. The gardener role was created to intervene in the self-organizing Agile teams whenever they could not solve a problem independently. This new organisational system was called the ‘self-controlling ecosystem’.

4.2.2. Composition and roles within self-organizing Agile teams

Considering the composition and roles within the self-organizing Agile teams, some structure was created by designing several new roles that should be accounted for within the self-organizing Agile teams. The newly created roles were the Process & Data Owner, Resourcing & Comms Owner, Team Facilitator, Engagement & Learning Owner, Customer Value Owner and Innovation & Disruption Owner (for a thorough explanation on these roles see Table 2). By means of these roles and accountabilities, more clarity was created on the responsibilities accounted for within the self-organizing Agile teams. Moreover, teams were decided to be fixed instead of flexible. This contradicts with literature concerning self-organizing Agile teams within network regimes (Kuijpers et al., 2010).

Table 2. Roles and team accountabilities within the self-organizing Agile teams

Role	*Accountabilities*
Customer Value Owner	- Act as a champion for customer perspective - Challenge team maintain/improve quality standards - Measure customer satisfaction
Innovation & Disruption Owner	- Suggesting new ideas and approaches - Bringing fresh insights and impulses into team - Challenging the status quo/play devil advocate
Resourcing & Comms Owner	- Managing capacity, resource allocation - Task distribution, new request management - Communication within and outside the team - Administration (vacation, EJs, interns, compensation)
Engagement & Learning Owner	- Forging/maintaining team culture - Running team retrospectives - Ongoing feedback and development

	- Onboarding new team member
Process & Data Owner	- Maintaining running processes and ensuring compliance (e.g. forecasting) - Managing financials and reporting - Tracking data and outcomes on team dashboards
Team Facilitator	- Facilitation of self-organizing Agile team meetings - Maintains role and responsibilities' clarity - Review/update mission and objectives, OKRs - Represent self-organizing Agile team in companywide meeting

4.2.3. Leadership

The gardener role was created to replace the Crew Leads which were operating in the previous organisational structure. However, the accountabilities of the gardener changed in comparison to those of the Crew Leads'. The gardener was responsible for multiple teams whereas the Crew Lead was solely responsible for one product area. Furthermore, the role changed to a coaching and supporting role instead of a managing role. Another newly created role was that of the DoO, who was among others responsible for driving the change towards the self-organizing structure. For a thorough explanation on newly created leadership roles and accountabilities, see Table 3.

Table 3. Leadership roles and accountabilities

Role	*Accountabilities*
Gardener	- Coaching of self-organizing Agile teams - Escalation point/Conflict resolution - Support the DoO in creating and optimizing the ecosystem; facilitate the implementation of new processes - Maintaining the ecosystem; facilitating recurring processes

	- Member of management team
Manging Director/DoO	- Main accountability to create and optimize the company wide ecosystem (with strong support from Gardeners)
Managing Director/Customer and Product Management	- Accountability for all customer and product related topics (with strong support from Gardeners)

4.2.4. Communication

In terms of communication, mandatory team meetings were implemented during the intervention. Within this mandatory team meeting, the purpose, objectives and scope, behaviours and commitments and ways of working should be defined within each self-organizing Agile team. The management called this team meeting a 'team chartering'.

Also team reflections and across team reflections were implemented to reflect and optimize the way the self-organizing Agile teams interact with each other and the rest of the organization.

Furthermore, the network regime used a dashboard to keep track of the revenue. During the intervention, team revenues were added to this dashboard. The self-organizing Agile teams were given the autonomy to be in charge of their own revenue and to keep track of their own progress.

4.3. Success factors and barriers encountered with the implementation of the self-organizing Agile teams within the network regime

Within this chapter, the elements which contributed to- or obstructed the self-organizing Agile teams from being successfully implemented within the network regime were analysed. Additionally, the success factors and barriers found in literature regarding the successful implementation of self-organizing Agile teams within bureaucratic organizations were compared to the results found within a network regime.

Elements within the network regime which were found to contribute to the successful implementation of the self-organizing Agile teams were trust, autonomy, (external) leadership, appointing a driver of change, communication in terms of face-to-face meetings, and the creation of structure by forming clear roles. The elements of team orientation and learning as found in literature, were not found to be great contributors or barriers for the successful implementation of the teams within a network regime. Barriers found for the successful implementation of self-organizing Agile teams were the lack of communication in terms of cross-organizational communication and

communication tools, the lack of a clear overall structure and the lack of (time for developing) adequate skills and abilities for carrying out the new responsibilities within the teams.

The empirically found success factors and barriers for successfully implementing self-organizing Agile teams within a network regime are stated in the sections below.

4.3.1. Trust

Several studies stressed the importance of trust within an organization when implementing self-organizing Agile teams (McHugh, Conboy & Lang, 2012; Moreira, 2013; Hoda, 2011; Cockburn & Highsmith, 2001). One of the main positive characteristics of the network regime resulting from the interviews, was the presence of trust. This appeared from the statements of respondents about the supportive and caring colleagues. One employee said:

'The greatest thing is that you know that there are colleagues that you can ask anything, they will support you and coach you and find out what you need.' (R5)

Another said:

'*We have a lot a lot of trust already in the crews, we are scoring quite well probably on this one.'* (R11)

Respondent 7 stated: *'One of the reasons I am still here is because I am aware of… I love my colleagues here, I will never find as many great colleagues any more than I have here. You will never find as supportive and really people who are really interested in you.'*

To the question: 'What elements in the organization made that the implementation of self-organizing teams was (not) successful?' many respondents mentioned the caring and open colleagues to be of great importance for successfulness of the teams. One respondent said:

'The openness of everyone to try out the new model was a success factor!' (R2 survey), whereas another mentioned:

'A success factor were the collaborative employees.' (R3 survey)

Moreover, when asking the question 'Do you trust that when you do not have enough capacity, the members of your team will help and support you in your tasks, and successfully take over the tasks you are not able to finish?' 85,7% answered with yes. This showed the amount of trust and openness among employees, which had been a great contribution to the successful implementation of the self-organizing Agile teams within the network regime.

4.3.2. Autonomy

As found in literature, the amount of autonomy seems to be of great importance for the successful implementation of self-organizing Agile teams in both bureaucratic as flexible organizations (Moe et al., 2008; Karhatsu et al., 2010; Balkema & Molleman, 1999; Kuipers et al., 2010). Since network regimes are ought to have a great amount of autonomy and freedom among

employees (Kuipers et al., 2010), this element was likely to appear as a success factor within the network regime. Results show that this statement was indeed supported within the network regime studied. One employee stated:

'That's the cool thing about the company because we are a perfect size where you can actually shape your own role and like, make your new role because this what I am doing now.' (R9)
Another said:

'… That gives a lot of freedom to me, it is really beneficial to be flexible and you don't have to stick to certain times where you have to be in the office so. That's really cool and then I also like that my manager provides a lot of freedom as well in terms of content, so in most cases he just says what the objective is or the need of the customer and then he lets me do a lot of things on my own.' (R12)

However, in comparison to bureaucratic organizations, the difficulty for network regimes regarding autonomy appeared to be not giving too much autonomy and freedom to its employees. An abundant amount of autonomy and freedom in combination with a lack of structure would create confusion on certain responsibilities and decision making powers. This was supported by the quotes of (senior) employees below:

'Empowerment is a big word within the company. And I have the feeling we have a long history of empowering people too much. Especially junior people and I have seen people struggling a lot with too much responsibility, me included. So a self-organizing team means empowering teams but also individuals within the team and I am not sure if we as an organization have the level of maturity to make people feel comfortable with the extra responsibilities that will come on top. … 'We have a strong… or we claim to have a very strong empowerment culture. And the beauty of it is, if you feel confident with your skills and the challenges, there are no processes that you need to be aware of. Just do it. It gives people a lot of freedom, if people want to have a lot of freedom. For the rest, it overwhelms people at times.' (R3)
Furthermore, respondent 6 stated:

' And it is very empowering, a lot of freedom, my question marks are always on the effect if you are not doing a good job, who knows I am not doing a good job. As long as I am doing a good job it is fine. The second I am not, it is very unclear, how the organisation corrects that.'
Lastly, respondent 13 said:

'*So I think we need to be very clear and not confusing it with 'now you can do whatever you want' basically. And, so it is kind of a balance in giving them the freedom to decide on certain aspects but also giving them a framework and a good environment to work in.'*

To prevent this issue from becoming a barrier for implementing the self-organizing Agile teams and to ensure that the teams would succeed within the network regime, more structure around the amount of autonomy and freedom was created during the intervention. First of all, this was done by creating the 'self-controlling ecosystem'. By means of this 'self-controlling ecosystem' a back-up was created whenever members of the self-organizing Agile teams could not solve problems or were

doubting about making decisions among themselves. Second of all, autonomy and freedom were restricted by creating clear roles and tasks to ensure the multiple responsibilities within the teams. Examples of new tasks which were to be taken on within the team roles were financial forecasting or sales. These tasks were covered by the Crew Lead in the previous structure. The team members got the freedom to decide among themselves how they would obtain their results and had to keep track of them. How the multiple roles and responsibilities would be divided among the team members, was decided among the team members themselves. This however, had to be done within the guidelines of the role responsibilities created. Respondent 1 in the additional interview stated:

'Each person within the self-organizing team has an internal task, that we have assigned to ourselves in order to make the teams survive. So we have some core aspects each team has to take care of and each member can decide who is going to take care of what.'

She also said:

'The team and the people in the team can discuss on how for example in the case a Program Coordinator wants to take more Program Manager tasks, you know it is up to the team to decide. You know, whether this person can take more responsibilities and is visible and so there is flexibility, but still there are specific roles that are linked to specific salaries and so on.'

Moreover, the role of the gardener was created to intervene whenever team members would experience an abundance of autonomy and freedom. This created a security net for the teams to fall back on.

The balance of internal, external and individual autonomy as found in the literature was tested by asking several questions to the respondents after the implementation of the self-organizing Agile teams. To the question: 'How much autonomy does the team have with respect to the rest of the organization?' all respondents answered with 'a lot of autonomy', or 'a (quite) high amount of autonomy'. Therefore, it was found that a high amount of external autonomy was assigned to the teams.

When asking whether the employees felt like the collective team goals were equally- more- or less important than the individual goals within the team, 71,4% stated that team goals were more important and 28,6% stated that these goals were equally important. One employee stated:

'Collective goals are more important than individual goals, but not that much.' (R7)

This respondent also said:

'We usually discuss issues and make collective decisions. Otherwise, people are empowered to make decisions based on their best judgement.'

Drawing on these quotes, it can be concluded that there was also a high amount of internal autonomy within the teams after the implementation of the self-organizing Agile teams.

To the question: 'How much freedom do you have in organizing your own tasks within the team?' all respondents answered with 'a lot of freedom'. One employee stated:

'It is not much different from before. I have a lot of freedom. They don't care how it gets done, as long as my tasks are completed.' (R6)

Thus, it was found that both internal, external and individual autonomy were accounted for within the network regime which led to the successful implementation of the self-organizing Agile teams.

Even though the challenge for network regimes exist to overload employees with freedom and autonomy, by means of the intervention, the excessive amount of autonomy was restricted. This was done by implementing several restrictions by means of roles, responsibilities and accountabilities within the teams. This was found to be of great importance for the successful implementation of self-organizing Agile teams, since it created more structure for the team members. By implementing an external leadership role, the achievement of results was ensured. This was found to contribute to the successful implementation of the self-organizing Agile teams since employees got enough autonomy to self-organize, yet were given a restriction to ensure that the team would obtain its results.

In opposition to bureaucratic organizations, the challenge for network regimes appeared to be not giving too much autonomy to the teams instead of too little. Network regimes thus differ much from bureaucratic organizations regarding autonomy, however this element is important for both organizations to successfully implement self-organizing Agile teams.

4.3.3. (Shared) Leadership

Multiple researchers emphasized the importance of shared leadership or decentralized leadership roles within both bureaucratic and flexible organizations when implementing self-organizing Agile teams (Karhatsu et al., 2010; Moe et al., 2008; Kuipers et al., 2010; Castiglione, 2007). Furthermore, Kuipers et al. (2010) emphasized that leadership roles within network regimes should be divided within the organization and should mostly be used for giving direction, supervision or monitoring and coordination. Moreover, multiple definitions of self-organizing Agile teams state the importance of clear external leadership to establish some checkpoints for the teams (Cockburn and Highsmith 2001; Takeuchi and Nonaka 1986; Augustine et al. 2005; Anderson et al. 2003; Chau and Maurer 2004). By means of this chapter the importance of external and shared leadership roles will be empirically tested.

A possible barrier encountered before the intervention within the network regime was the lack of capability among the leaders. It was also claimed that the leadership role was not strongly present within the network regime. One employee stated:

'Self-organizing teams should be the holy grail that would solve our problem. And I would like to add a different question: 'or is it the lack of senior leadership'. If we would have stronger senior leadership, would it maybe solve the problem as well: I do not know…' (R3)

Respondent 7 stated:

‘*One of the challenges I see here as well, we have a leadership team that really doesn’t know how to lead. A lot of them never had any outside experience out of the company, also they lack not only the experience but often the skills because they weren’t really thought how to…*’
Lastly, a team leader mentioned:

‘I wasn’t ready at all. It was entirely too early. … I was a senior consultant in TS and then I became a team leader in TD. After 15 months at the company and that was way too soon.’ (R6)

To manipulate the element of leadership, clear external leadership roles were created during the intervention. The role of gardener was created and responsibilities and accountabilities covered by this role were established. The role of gardener was taken on by a senior person with experience in coaching a team. By creating this role, the network regime had some external checkpoints established for the self-organizing Agile teams to fall back on when they could not obtain their results independently. Regarding the gardener role, a respondent within the additional interview mentioned:

‘*So this would be like the gardener role; to coach the teams, and this is also the person that facilitates the conflicts in case they cannot be solved among the team members, so in case it escalates we can involve the gardener to help us out. … So if we have like a new process this should be implemented, so overall the gardener would support the teams with the implementation of f.e. new processes. Or tools.’*

Moreover, the survey showed that the leadership tasks within the network regime, which were first covered by the Crew Leads, should now be divided among the team members operating in the self-organizing Agile teams. Therefore, the leadership role was shared among team members, as stated in literature. One employee said:

‘We will switch the task of the team facilitator quarterly. So everyone will take the lead.’ (R8 survey)

Next to that, another leadership position was created to drive the change towards the self-organizing structure and to support team members in their personal development. One employee stated about this newly created function:

‘DoO, so we are recruiting someone who is responsible for all the managers. Cause now our CEO is much more customer oriented, he cannot do internal management and he is extremely good in the customer role so he would stay there and we need to recruit someone who can actually manage us.’ (R2)

Therefore, the possible barrier encountered before the implementation of the self-organizing Agile teams within the network regime was covered by the creation of two external leadership roles and clear rules for these roles. The creation of these roles and structures were found to contribute to the successful implementation of the self-organizing Agile teams. Consequently, shared leadership and the creation of clear leadership roles were seen as great success factors. Without the separation of the leadership tasks and creation of the external leadership roles, employees expected to encounter much unclarity and a lack of guidance within the network regime.

4.3.4. Driver of change

Additional to the division of leadership roles and the insurance of an external leader within the network regime it appeared to be important to appoint a driver of change. This person was someone operating in the management team to ensure management support for the change towards a self-organizing structure. This appeared to be of great importance for the implementation of the teams within the network regime. One member of the management team stated:

'I tend to be an optimist in this one; I think there are some very big challenges that are definitely being solved by implementing the teams.' (R14)

One member of the management team was appointed to drive the change towards the successful implementation of the self-organizing Agile teams. This member was strongly involved in initiating the intervention, which manipulated many elements in the organization to become contributions to the successful implementation of the self-organizing Agile teams. This member was also involved in building the new structure revolving around the self-organizing Agile teams. One employee stated after the implementation of the teams:

'"Software" was supportive: culture and leadership helped and supported the idea.'(R3 survey).

Results therefore show that within a network regime, a driver of change operating in the management team should be appointed to contribute to the successful implementation of self-organizing Agile teams.

4.3.5. Communication

The importance of clear communication when implementing self-organizing Agile teams within both bureaucratic organizations and network regimes was stressed by many researchers (Karhatsu et al., 2010; Moe, Dingsøyr & Dybå, 2008; Cockburn & Highsmith, 2007; Hoda, 2011; Kuipers et al., 2010). Kuipers et al. (2010) emphasized the presence of an accessible intranet system to bring together different sources of knowledge within network regimes. Additionally, these kind of systems should ensure continuous meeting opportunities between people in terms of physical location, informal meetings and open information systems which are accessible for everyone (Kuipers et al., 2010).

Within the network regime studied, it appeared that several parts of communication were not greatly organized before the implementation of the self-organizing Agile teams. By means of the intervention, some of these barriers were tried to be prevented. However, even though many measures were taken, the chapter explaining the degree of success of the teams showed inconclusiveness about the contribution of communication for the successful implementation of the teams. Some employees felt like the intervention improved communication which led to a more successful implementation, whereas others saw lacking communication as great barrier for the teams to optimally work.

It was therefore found that the element of communication did not fully contribute to the successful implementation of the self-organizing Agile teams and lacking communication on some parts even prevented the teams from being fully successfully implemented. Therefore, separate elements of communication: face-to-face meetings, communication tools and cross-organizational communication are divided to give a clear overview on which elements were seen as success factors and which were encountered as barriers. This will be further discussed and supported with evidence in the section below.

4.3.5.1. Communication as success factor

Face-to-face meetings

One possible barrier encountered for the successful implementation of the self-organizing Agile teams within the network regime was the lack of face-to-face meetings due to a proximity issue between the individual employees. This lack of proximity was caused by the four separate offices situated in one city and by the fact that some employees were not working in the offices because they had to deliver a product to the customer. This created the barrier of lacking fast communication between individual employees. Almost all respondents mentioned the possible barrier for the lack of face-to-face contact due to a lack of proximity among employees:

'And I don't see the colleagues there, I don't see them, I don't speak with them, and I cannot chat with them because I'm stuck, either I'm travelling or sit here in my corner, and I don't see anybody, I don't see even anybody who sits on the first floor here.' (R5)

'I think the key challenge is and I mean you see that, why there is not a lot of people in the office actually, so people are a lot on the road.' (R10)

'There is a lot of empty offices. Like if you go into UK (office in Bamberg) *on the top floor you know there might be 2 people in that huge space, and then another 2 or 3 scattered over there.'* (R15)

'I think it would be easier if everyone was in the office all the time of course but that is not realistic because people are travelling. But I have been struggling to set a date and to find time to have a knowledge sharing.' (R3)

To prevent this element to become a barrier for implementing the teams, a mandatory team chartering, and (across) team meetings were implemented within the network regime. The team chartering forces team members to have face-to-face meetings together. Resulting from the additional interview and the post survey, it became clear that by implementing weekly meetings, the communication had improved tremendously and this was found to be a great success factor for the implementation of the self-organizing Agile teams. One employee stated in the additional interview:

'*We have like this weekly meetings; this helps a lot because we can share were we are working on, what we are doing and in case of sickness or vacation you know there is someone who can help you out with that.'*

Another employee stated:

'Team chartering's were really successful.' (R5 survey)

Furthermore, one person in the team was made responsible for ensuring that feedback was given among team members. In the additional interview it was stated:

'There will be one person in each team that is also responsible to make sure that we keep giving feedback to each other and that we have retrospectives and so on.'

Regarding the proximity issue, the implementation of the self-organizing Agile teams led to teams moving to sit together. Found from the additional interview:

'*We moved a lot of the teams to sit together. So several of us are now in the design team include moving to Carolina Strasse* (office in Bamberg). *Because that office is basically always empty, so a lot of us who are more stable in the office, we are going to put them over there and some of the so teams will sit there as well.'*

The proximity issue was therefore not encountered as barrier when implementing the teams. The self-organizing Agile teams even improved the existing problem in the network regime. Respondents stated that being close together and working in the same space was found to be a success factor for implementation of self-organizing Agile teams in the network regime.

4.3.5.2. Communication as barrier

Even though good communication by means of face-to-face meetings was found to be a contribution to the successful implementation of the self-organizing Agile teams, some elements of communication were also found lacking. This appeared to be a barrier for the successful implementation of the self-organization Agile teams within the network regime. When asking respondents in the survey what elements made that the implementation of the self-organizing Agile teams was (not) successful one employee responded with:

'The communication could have been more transparent.'

Cross-organizational communication

As already found within the interviews, transparent communication across the organization seemed to lack within the network regime. A great example of the lack of transparent communication was when a key stakeholder was not aware of an important update about the new structure on one of the communication platforms used within the network regime. He reacted when seeing the post:

'*Hm interesting, so this yammer post, I have a similar vision, so I'm happy that we seem to be aligned.'* (R11)

Another employee stated:

'*Still people are working very much on their own programs so there is not a lot of information exchange between the various people.'* (R13)

Furthermore, employees within the network regime did not know what their colleagues were working on, which was found to be a possible barrier for implementing the self-organizing Agile teams. One interviewee stated:

'Actually, I have no clue what POD is doing. I have no idea. I know they do career workshops but don't ask me what it is, don't ask me what they do there, and why they are doing it and stuff, you know.' (R9)

Another said:

'A typical problem of the company is that we develop the same thing for different customers, because we don't know that it is developed before.' (R2)

The pitfall of the lack of cross-organizational communication was tried to be prevented by implementing cross-team reflections within the network regime during the intervention. Cross-team reflection was intended to zoom out regularly to reflect on and optimize the way the self-organizing Agile teams interacted with each other and the rest of the organization. However, to the question: 'What should still be improved within the organization for the self-organizing Agile teams to optimally perform within the network regime', many respondents mentioned the cross-team communication. One employee said for example:

'We need a framework for the small teams to ensure alignment and Management across teams.' (R2 survey)

Moreover, the actual execution of these cross-team meetings and alignment across all teams was found to be something to improve when analysing the additional interview and the survey. A quote from the additional interview supports this was stated below:

'And now we are thinking to have one big meeting with all the teams together. So it's not tried out yet, we will start next week I don't know, yeah next week, ehm, and yeah I think this will also help in terms of creating like to have shared knowledge on what is going on in the company, in the teams you know.'

It was therefore found that the absence of cross-organizational communication was an obstruction for the teams to be fully successful.

Communication tools and platforms

Within the interviews, the respondents stated that there were plenty of communication tools available within the company, yet most of the employees were not aware of the existence of the tools or lacked knowledge on how to use them. Furthermore, there was no uniformity among communication tools and methods. The lack of awareness and uniformity of tools within the company can be found in the quote below:

'… We are not familiar with the tools, but this should be essential for so teams in the future, so we really need that.' (R5)

Respondent 12 mentioned:

'So there needs to be clarity on the way of communication.'

To prevent this element from becoming a barrier, the implementation of team revenues within an already existing dashboard was made mandatory during the intervention. This dashboard was used to create more transparency within the organization and the visibility of results. Within the additional interview, an interviewee stated:

'*... So this dashboard basically keeps the overview on the projects, the revenue, the days the internal capacity of each person and so on.. And now we added this new component about the self-organizing teams. So we also can compare you know like for example the revenues among the self-organizing teams, and so on. As well as other things of course. So this is a bit the reason why it's going to be like important for us to have this dashboard because it has created a bit of transparency among what each crew is doing'.*

However, next to this dashboard, multiple other platforms were still used within the network regime and tools within or across the teams were not uniform. To the question: 'What do you feel should still definitely change within the organization in order to make the teams optimally work?' respondents mentioned the use of uniform and transparent tools. One respondent stated:

'There is not much clarity and alignment around tools (e.g. trello, microsoft teams). Different teams use different tools.' (R1 survey)

Furthermore, an online communication platform existed in the company, but was not consequently checked and used by all employees. This resulted in a lack of knowledge sharing among employees. Moreover, multiple platforms instead of one overarching platform were used. This resulted in a lack of transparency on where documents and information were stored within the network regime. To the question: 'Is there a platform where you can find where other teams are working on and where you can find additional information about the projects of other teams?' 62,5% answered no. One respondent stated:

'*… It is the clarity where we lack. The piece where we are not aligned, and we lack clarity and we also don't have a lot of alignment across the different crews.'* (R10)

The problem of no uniformity amongst methods and tools was also mentioned in the additional interview:

'Like we have experimented with methods and tools that we could have implemented in order for us to self-organize you know and to keep the track so there is no alignment in this stage, but they just tried out some stuff now and then to create alignment around.'

Another employee stated:

'*About the tools, we are not aligned on the tools yet, for the managing product for example, different teams use different tools but in each team there is one main tool that people are using.'*

Respondent 6 in the survey stated:

‘*Yes, but there needs to be more alignment on which tools we are using overall as a company.’*

Lastly, respondent 3 mentioned in the survey:

‘*We should find one common platform to communicate within* the company *and between SOTs.’*

Within literature, communication was seen as one of the greatest contributors to ensure success in implementing self-organizing Agile teams in both bureaucratic organizations as network regimes. Within this study, it was found that (the lack of) communication both served as contributor and barrier depending on how this aspect was arranged within the network regime. The implementation of several face-to-face meetings led to a more successful implementation. However, the lack of cross-organizational communication and uniform communication tools and platforms within the network regime were found to obstruct the teams from being optimally implemented. The lacking communication resulted in a lack of transparency and insecurity among team members in the network regime, which was not supportive for the successful implementation of the teams. However, when no interventions on the part of communication had been done, the implementation would probably have been less successful. Thus, the element of implementing face-to-face meetings did contribute to the successful implementation of the teams. When comparing these results to bureaucratic organizations, the element of communication might be of even greater importance in a network regime, since fast and transparent communication is crucial when operating in a very dynamic environment.

4.3.6. Structure

Since operating as a network regime asks much flexibility and adaptability from the employees, it has to be balanced with rules and processes (Moreira, 2013). This will create structure to prevent chaos and a lack of transparency to arise among employees. One of the main weak characteristics of the network regime, however, was found to be the lack of structure. Employees stated that little processes and clear rules were present within the network regime. One employee stated:

‘*We lack clarity, how we document things but also how to put processes in place, or someone knows the process but then the person leaves, and some will remember it but not fully and people don’t have the right approach and do it with different processes because we don’t remember the old one. … I think then the other piece is more on the structure side so more like the side of bringing clarity and structure for being able to be more Agile.’* (R10)

Another interviewee said:

‘*One of the key things for me is like trying to establish a baseline, kind of like the anchor in the mid of all this flexibility and agility.’* (R7)

Another employee stated:

'It is actually where do we need to keep to our structure, we might be a little bit too flexible to be Agile.' (R11)

For the self-organizing Agile teams to be successfully implemented within the network regime, processes were applied during the intervention. These newly created processes created structure and were found to greatly contribute to the successful implementation of the self-organizing Agile teams. However, not all lack of processes and rules could be accounted for, since the pitfall was so clearly present before the implementation of the teams. These remaining lacking processes and rules obstructed the optimal implementation of the self-organizing Agile teams in the network regime. The aspect of (the lack of) structure to be either success factor or barrier for the implementation of self-organizing Agile teams within a network regime will be explained in the chapter below.

4.3.6.1. Structure as success factor

Since a lack of structures, processes and rules were detected within the network regime, much processes and rules were implemented during the intervention. First of all, the formal structure revolving around self-organizing Agile teams was visualized and communicated. Furthermore, the self-controlling ecosystem was created and communicated. Rules were also formulated among several roles and accountabilities within the teams. Some respondents mentioned that these newly applied structures, processes and rules contributed to the successful implementation of the self-organizing Agile teams. Respondent 1 in the survey stated:

'The MT defined a clear structure around SOTs we have clear roles and responsibilities.'

And respondent 5 said:

'Team chartering's were really successful. Openly sharing what financial Targets each Team has is very useful for self-guidance.'

Without these new structures and rules, team members would not have had the clarity and transparency around topics like roles, accountabilities and responsibilities. Therefore, the introduction of these structures has led to more success in implementation of the self-organizing Agile teams within the network structure.

<u>Role division</u>

Resulting from the interviews, a possible barrier found for the implementation of the self-organizing Agile teams would be that responsibilities within the teams would not be clear. Respondent 2 mentioned:

'But the responsibilities that we would have with a leader right, it's about listing those responsibilities and see how these respond by one person in this case there is clearly a team leader, or should this responsibilities divided among team members?'

Furthermore, respondent 10 said:

‘*But then its needs to be really clearly defined of what the responsibilities are.*’

Other fears expressed within the interviews regarding the responsibilities within the self-organizing Agile teams were:

‘I hope that we use this new structure to also create more clarity on a couple of things like our basic structure, our basic job descriptions and roles and responsibilities.’ (R11)

‘*… and also the roles and responsibilities, who is responsible for communicating, communicating what?… who is responsible for this product and who communicates changes in models? If a model changed, who feels responsible to communicate this to the whole company?’* (R12)

As found in the chapter before, during the intervention new roles were created to prevent this barrier to occur and to successfully implement the teams. Even though all the formal functions present in the network regime before the implementation of the self-organizing Agile teams remained, a division was made between the multiple team roles Process & Data Owner, Resourcing & Comms Owner, Team Facilitator, Engagement & Learning Owner, Customer Value Owner and Innovation & Disruption Owner. Accountabilities first covered by the leadership role, also had to be taken on by the teams. These accountabilities could be allocated to several team members. The separation of the roles and construction of several accountabilities led to structure and transparency among employees. Within the survey, many respondents stated that the creation of the new roles were a great contribution to the successful implementation of the self-organizing Agile teams. One employee stated:

‘There are 6 roles which each SOT (self-organizing team) must have, we are free to allocate them to whom we please. We also have a Team Chartering meeting where we discuss and define these roles and responsibilities. Tasks are allocated depending on which role you have.’ (R7 survey)

Another stated:

‘*They* (the roles) *are split equally and according to everyone's preference; done during our Team Chartering workshop.’* (R6 survey)

4.3.6.2. Structure as barrier

Even though much processes and rules were applied during the intervention, the pitfall of lacking structure within the network regime partly remained. When asking the question: ‘What do you feel should still definitely change within the organization/teams/job functions/mindsets in order to make the teams optimally work?’, it appeared that the lack of structure was still a great barrier encountered by many employees. One employee stated in the post-survey:

‘*"Hardware" is not supportive: processes, procedures, policies are not there’*. (R4 survey)

Another said:

‘*There is no clear playbook on how to make this work, lack of capacity, no upskilling/ alignment on how to execute SOT* (self-organizing team) *roles and responsibilities.’* (R7 survey)
And another respondent stated:

‘*There is still a lack of structure and processes.’* (R2 survey)

A reason for this remaining lack of structure could be because the role of the Crew Lead was withdrawn, and not all tasks were invested in the teams yet:

‘A lot of processes still exist on a crew level that needs to be adapted.’ (R6 survey)

Drawn from the results above, it can be stated that the network regime lacked rules and processes and therefore structure to make the self-organizing Agile teams optimally work. Even though much was done to prevent this element from becoming a barrier, it appeared that the barrier of a lack of structure prevented the teams from being optimally implemented within the network regime.

Where bureaucratic organizations lack flexibility and have a tremendous amount of structures and rules, a barrier for a network regime for implementing self-organizing Agile teams seems to be the abundance of freedom and flexibility combined with a lack of structure and procedures (Moreira, 2013). Therefore, the lack of structure was found to be a specific barrier for implementing self-organizing Agile teams within a network regime.

4.3.7. Employees’ skills and abilities

A last barrier encountered within the network regime that prevented the self-organizing Agile teams from being successfully implemented was the lack of right skills and abilities among team members. Within the self-organizing Agile teams, team members were expected to take on new roles and tasks which were first taken on by the Crew Lead, like financial forecasting. Before implementing the self-organizing Agile teams within the network regime, employees were inconclusive on how their roles would change. The one thought their role would change a lot which might impact the presence of the right skills and abilities among employees to execute their jobs. One employee said:

‘*It’s going to be a culture change, being open to embrace it.*’ (R5)
Whereas another did not think their role would change:

‘*For us, nothing will change, so I don’t care.’* (R9)

All employees however, were confident that they were able to take on the new roles which would be created by implementing the teams. However, because of the tremendous amount of workload, employees were afraid that the time to develop the new skills and abilities would lack. One senior stated:

‘*… Because often I see that I don’t have time to develop the skills I need.’* (R2)
Furthermore, some employees did encounter challenges for developing skills within the self-organizing Agile teams:

'No one of these people has a sales background. … Because there is a reason why you have certain skills that you need when you start a job right. And it is not something that you can just learn on the floor.' (R7)

After the implementation of the self-organizing Agile teams, many employees indeed stated that they did not know how to create the time to take on the new responsibilities and roles they had gotten. Respondent 3 in the survey answered the question 'When looking at your function within the new structure, what are the main challenges you experience in your job?' with:

'Finding time to fulfil more responsibility.'

Even though the lack of skills and abilities was not something the employees encountered as a barrier for the successful implementation of the self-organizing Agile teams before, this changed after the creation of the six new roles within the teams. From the interview and survey it appeared that employees did not yet have the right requirements to execute all the new tasks coming along with the self-organizing Agile teams. Furthermore, time to develop the required skills and abilities lacked resulting from the high workload detected in the network regime. To the question: 'Do you feel like you have the right amount of skills and abilities to work in your team and to take over the roles and tasks of team members when needed?' 37,5% answered yes, 37,5% answered partly, and 25% answered no. This shows that the skills and abilities of employees were not sufficient yet to optimally participate in the teams. An employee in the additional interview stated:

'... Like I don't know how to do financial forecasting and managing financial data from clients. I think there is a lot of this stuff was once sitting with the Crew Leads and now comes to the so teams and as a result there could be some kind of resistance because its more tasks and new things that people are not required to do, that weren't on their plate before.'

Another respondent stated:

'Teams should consist of experts in the different product Areas - currently, e.g former TS-Teams are supposed to also work on POD, TD stuff but do not have the capabilities.' (R5 survey)

One respondent stated in the survey:

'There is more responsibility with the SOT (self-organizing Agile team): traditional "management" tasks are now dispersed amongst SOT members'. (R7 survey)

These results have shown that both the skills and abilities necessary to optimally perform in a self-organizing Agile team, were not present yet. This could amongst others be explained by the lacking time to develop skills and abilities due to a high workload. This was found to function as a barrier to optimally implement the self-organizing Agile teams within a network regime.

4.4. Summary

Results have shown that several positive and negative characteristics of network regimes were found to contribute to- or obstruct the successful implementation of self-organizing Agile teams.

Foremost, results showed that the positive characteristic of supporting colleagues led to trust.

This was found to be a great success factor. Furthermore, the great amount of autonomy among employees contributed to the successful implementation of the teams. However, this only applied because several restrictions for autonomy were formed during the intervention. These restrictions created more clarity and transparency among roles and responsibilities. Moreover, the creation of an external leadership role which functioned as safety net and supporting role for the self-organizing Agile teams was found to contribute to the successful implementation. Additionally, appointing a driver of change who is in charge of ensuring a successful implementation was found to be of great importance when implementing self-organizing Agile teams within a network regime. It was stressed that this driver of change should be operating in the management layer of the organization to make great impact.

Communication and structure were both found to either contribute or obstruct the teams from being successfully implemented. Elements within communication that should be in place to successfully implement the teams are face-to-face and cross-organizational communication, uniform communication tools and an overarching communication platform. Within this study, face-to-face communication was in place, whereas cross-organizational communication, communication tools and an overarching platform were lacking. This obstructed the teams from being optimally implemented. Structure was found to be lacking in the network regime. During the intervention, structure was created by defining roles and responsibilities. This contributed to a more successful implementation of the teams. However, even though the structure had improved, the intervention could not fully eliminate the lack of structure. Therefore, results showed that due to a lack of structure difficulties arose when implementing the self-organizing Agile teams within the network regime.

Lastly, the lack of (time to develop) the adequate skills and abilities for working in the self-organizing Agile teams was found to be a barrier for the optimal implementation. The lack of time could be to blame on a high amount of workload among employees.

Chapter 5. Conclusion and Discussion

To give a clear answer to the question: *'How can Agile teams be clearly defined and which success factors and barriers can be identified when implementing these teams within a network regime operating in a non-software development environment?'*, a literature review and qualitative study were carried out by means of a theoretical review, several interviews, analysis of obtained documents, and a survey. The research question was split up in two parts, in which the first part reflected on the question: 'How can Agile teams be clearly defined?'. The second part was formulated as 'Which success factors and barriers can be identified when implementing these teams within a network regime operating in a non-software development environment?'. The first part of the research question was theoretically answered in chapter two and the second part of the question was answered in chapter four by means of empirical research. A theoretical framework was constructed for the second part of the question in chapter 2.

To answer the first part of the question: ‘How can Agile teams be clearly defined’, literature on self-organizing Agile teams was analysed. It appeared that the concept of ‘Agile teams’ was used in many different ways and various characteristics like self-organization, cross-functionality, customer centricity and project based teams of Agile teams were disclosed in several studies. Therefore, a clear-cut definition of ‘Agile teams’ was not found. However, one characteristic of an ‘Agile team’ was stated in all definitions, reflecting a consensus in the literature. Namely, that these teams should at least in some way be self-organizing or self-managing. Moreover, a sufficient and balanced amount of autonomy should be given to these teams and the leadership role within these teams should be shared. Furthermore, the presence of external leadership, in which checkpoints should be established to fall back on, was emphasized. The use of Agile methods within these teams was also stressed as main characteristic. Because the characteristic of self-organization showed to be important in the definition of Agile teams, the term used within this research was ‘self-organizing Agile teams’. Drawing from the empirical results, it appeared that the self-organizing Agile teams indeed took the amount of autonomy and both external and shared leadership in account. However, the clear Agile methods which differentiated self-organizing teams from Agile teams, were not sufficiently taken into account within the network regime. It appeared from the results that the absence of uniform (Agile) communication tools was accounted as barrier for the successful implementation of the self-organizing Agile teams. It can be discussed that the lack of Agile methods within the network regime was a result of the fact that the network regime was not operating a software development environment. Within software development environments, Agile methods were found to be the main characteristic of these teams since it enables team members to effectively construct new software in a much faster pace. However, since the network regime has to deliver a highly different product to their customer, Agile methods might not have been the most efficient way to obtain their eventual product. It can therefore be discussed whether Agile methods are also a main characteristic for organizations not operating in the software development branch. Drawing on these results, it can be confirmed that the most important aspects for defining self-organizing Agile teams are the presence of a sufficient amount of autonomy, external and shared leadership roles and the presence uniform (Agile) methods and tools. Without these aspects, obscurity among the definition of the teams will arise within the organization.

To obtain an answer for the second part of the research question, first, literature was explored to serve as theoretical framework. This theoretical framework was used to draw conclusions from the empirically found evidence. General literature studied the implementation of self-organizing Agile teams in either bureaucratic organizations or organizations operating in the software development branch. This literature found the main success factors for implementing self-organizing Agile teams to be a sufficient amount of autonomy, team orientation, shared leadership, redundancy and learning. Additionally, minimal critical specifications, communication, collaboration and trust were also found to be of great importance when implementing these teams in (bureaucratic) organizations. Furthermore,

barriers found for bureaucratic organizations respectively operating in a software development context, were found to be a disbalance of autonomy, management resistance, bad attitudes or inadequate skills among employees and the actual need for self-organizing Agile teams.

Literature focusing on implementing self-organizing Agile team within a network regime correspondent with general literature on the success factors autonomy, external and shared leadership, trust, communication and the minimal critical specification. An element that differed from general literature with regard to network regimes specifically was the composition of self-organizing Agile teams was stressed in literature on network regimes, since they were said to be fixed instead of flexible.

Drawing from the results, the most important success factors found for the successful implementation of the self-organizing Agile teams were found to be trust, autonomy, external/shared leadership roles and appointing a driver of change (operating in the management team). Moreover, face-to-face communication and the creation of structure by dividing roles and responsibilities were found to contribute to the successful implementation of the teams. However, cross-organizational communication and the lack of uniform communication tools and platforms were found to obstruct the teams from being optimally implemented. Additionally, the remaining lack of structure and lack of (time to develop) adequate skills required for working in self-organizing Agile teams were found to obstruct the self-organizing Agile teams from being successfully implemented within the network regime.

When comparing the empirical results to literature, some peculiarities are found and will be expounded on.

First of all, the minimal critical specification as described in both general literature as literature for network regime was found to be of much greater importance in practice. Within general literature, this aspect for implementing self-organizing Agile teams was not greatly emphasized. However, it appeared that within this network regime, the application of structure was highly required to make the teams work. The element of implementing more structure was one of the most important findings when comparing to existing literature. Where bureaucratic regimes might have difficulties reducing structures within the organization, network regimes differ since they might sometimes be too flexible and thus need more structures and specifications. Balancing between freedom and structure within a network regime was found to be of great importance when implementing self-organizing Agile teams. In this study, structures and minimal critical specifications were created among roles and responsibilities, which greatly contributed to the successful implementation of the teams. This success factor is one specifically found for network regimes, since network regimes can sometimes lack structure, emphasizing that there is a need for more rules which can be offered by an intervention.

Second of all, team orientation, redundancy and learning as found in general literature for implementing self-organizing Agile teams seemed not to be of great importance in the successful implementation of the teams within a network regime. However, since these elements were merged in the elements autonomy and communication these specific elements were not often mentioned.

A great success factor both found in general literature, literature about network regimes and drawn from empirical results was autonomy. The main difference found for autonomy when comparing literature to practice was the fact that the network regimes might be to flexible and give too much autonomy to their employees. This in addition to literature about bureaucratic organizations, where it is stressed that there should be enough autonomy. It can be discussed that since network regimes are small companies operating in a dynamic environment, an abundance of autonomy was already covered by the employees. This combined with lack of rules and responsibilities led to confusion and chaos. This was found to be a possible barrier to obstruct the teams from being successfully implemented within network regimes. Hence, this possible barrier should be kept in mind when implementing self-organizing Agile team within a network regime. Within this study autonomy was restricted by the creation of several roles and appointing an external leadership role. By doing this autonomy was found to be a great contribution in the successful implementation of the self-organizing Agile teams.

Another success factor found for the implementation of self-organizing Agile teams was the presence of external and shared leadership roles. Drawing from literature and empirical results, it can be concluded that this element is important for the implementation of self-organizing Agile teams in both bureaucratic organizations as network regimes. It can be discussed that while in bureaucratic organizations the teams are implemented to get rid of the many hierarchical layers, network regimes implement the teams to rectify the lack of seniority and leadership roles. For network regimes, it therefore appeared that more clarity around leadership roles had to be applied to make the teams optimally work. When implementing self-organizing Agile teams within network regimes, this difference should be taken into account.

Moreover, communication was found to be important for the (un)successful implementation of the self-organizing Agile teams within the network regime. Several elements of communication - like face-to-face meetings, cross-organizational communication and uniform communication tools - were emphasized in both literature as found in the empirical results. Drawn from the results, it can be concluded that within the network regime the absence of an overarching communication platform was found to be a great barrier to successfully implement the teams. This was not greatly emphasized in general literature about bureaucratic organizations. It can be discussed that big bureaucratic organizations already have such an overarching platform in place, since they are older and have a greater need for an overarching platform. However, network regimes are smaller and thus might not have implemented such a platform yet. This, therefore, was found to be of great importance for a transparent communication between (team) members of the organization and to encourage knowledge sharing.

Furthermore, as found in literature, trust was found to be a great contribution for the successful implementation of the self-organizing Agile teams within the network regime.

The only success factor found in literature concerning the implementation of self-organizing Agile teams in network regimes that differed from the general literature was the team composition. Literature stressed that the teams within network regimes should be fixed instead of flexible, to adapt

to their dynamic environment. Within the network regime studied however, the teams were fixed. Where in other network regimes this might not have worked, within this network regime it made sense. This because the teams were customer-centered and the customers operated within different countries. The team members therefore needed to be composed of employees speaking the customers' languages. Therefore, it was not possible to create flexible teams. Team members were aware of this specific organizational characteristic that made the teams fixed. Therefore, fixed teams were not encountered as barrier for this network regime.

Remarkably, some of the barriers found in general literature seemed to be contradicting for network regimes drawn from the empirical results. For example, the detected barrier of management resistance within general literature was found to be clearly absent in the network regime. It can be discussed that this results from the fact that network regimes are small companies. Within small companies big decisions like changing to a self-managing structure are mostly driven by the management. Therefore, it is almost impossible to detect this barrier within network regimes. Appointing a driver of change operating in the management team was even found to be a great contribution in the successful implementation of the self-organizing Agile teams within the network regime.

Furthermore, the law of requisite variety was used to eliminate the barrier for the actual need for self-organizing Agile teams as found in general literature. This because network regimes need a great amount of flexibility and operate in a very dynamic environment, which creates the need for much self-organization. Therefore the need for self-organizing Agile teams for network regimes is definitely present.

The barrier concerning bad attitudes among employees was also not detected in the network regime. It was even found that the employees within the network regime were trusting and helpful. They were found to be one of the main contributors for the successful implementation of the teams. This can be explained by the fact that network regimes are much smaller than bureaucratic organizations, which creates a small group of devoted employees. When less people are employed in an organization, it can be discussed that they either are supportive or not supportive of a big change like implementing self-organizing Agile teams within the company. Therefore, within this network regime, the positive attitudes of the employees were seen as contributors to the successful implementation.

The last barrier of inadequate skills among employees did occur within the network regime. It can be concluded that a high workload caused a lack of time to develop the adequate skills among employees. This was found to be a barrier for successfully implementing the teams within a network regime and thus matched the general literature.

Overall, it can be concluded that the present of trust and a balanced amount of autonomy in combination with clear external leadership should be present in network regimes in order to ensure a successful implementation of self-organizing Agile teams. Furthermore, the need to identify a driver of change to initiate an intervention that ensures more structure was found to be particularly important

for network regimes. Furthermore, several aspects of communication (e.g. face-to-face communication, cross-organizational communication, uniform communication tools and platforms) should be taken into account in order for self-organizing Agile teams to succeed within network regimes. Moreover, the balance between freedom and structure within a network regime was found to be of great importance when implementing self-organizing Agile teams.

Specific barriers in the implementation of self-organizing Agile teams within network regimes found in this study were: a lack of cross-organizational communication and communication tools, a lack of structure and a lack of time to create the right skills and abilities for the new tasks and responsibilities employees obtained in the self-organizing Agile teams.

This research contributed to literature since the definition of Agile teams is inconsistently used throughout the literature. Therefore, the term was not clearly understood which caused misconception among scholars and practitioners. This study aimed to obtain more clarity by synthesizing the literature. Furthermore, as stated in the introduction, a minimal amount of literature was written about implementing self-organizing Agile teams within a network regime not operating in a software development context explicitly. Moreover, the success factors and barriers found for network regimes within literature were not yet empirically tested. By comparing empirical found success factors and barriers for network regimes to already existing literature, success factors and barriers were confirmed or denied. Moreover, specific success factors and barriers for implementing these teams in network regimes were detected. Therefore, theoretical insight was created by means of this study. Practitioners and students can explore this literature when they want to find more information about the implementation of self-organizing Agile teams in network regimes or organizations not operating in the software development branch.

In practice, more information was empirically gathered to get insight in how to successfully implement self-organizing Agile teams within network regimes. Several success factors and barriers were identified which should be taken into account when implementing self-organizing Agile teams in network regimes. This research can therefore be used by managers of network regimes when they feel the urgency to change to an organization revolving around self-organizing Agile teams.

5.1. Limitations and future directions

Within this study, several limitations can be distinguished. These will be elaborated on in this section to prevent them from happening again in further research. Firstly, multiple measurement moments were conducted within this study. It can be discussed whether prior obtained knowledge from the first interviews biased the researcher when analysing the additional interview and survey, which could have influenced the eventual results. Since multiple methods were also used to analyse this data, it is recommended for further research that the same methods should be used, which will ensure less bias when analysing data obtained at different times.

Secondly, since the survey was anonymously send to the whole company, the identity of the respondents was unknown. Therefore, it cannot be evaluated whether the sample was representative of all departments and functions. It is recommended for further research to mention the post-survey in the first interviews, so that the (selected) respondents know that a follow-up survey will be send. By doing this, respondents will know that they have to fill in a survey later on. This will stimulate them to fill in the survey which will ensure a more representative sample.

Thirdly, the response rate of 12,7% was found to be quite low, which might have affected the eventual outcomes of the research. It could be that this was a systematically drop-out, which might have disturbed the findings (e.g. employees who disliked the self-organizing Agile teams and therefore deliberately not participated in the survey). The above mentioned recommendation for further research could also help to prevent this limitation from occurring.

Fourthly, it should be noted that the majority of the results regarding the degree of success of the teams were based on the additional interview and the survey. When conducting the additional interview and survey, not all the teams were not fully implemented yet. Therefore, another measurement moment should have been conducted after approximately six months, to surely conclude whether the self-organizing Agile teams were successfully implemented within the network regime in the long term. Due to time restrictions it was not able to do this within this study.

Another recommendations for further research is to conduct quantitative researches concerning this topic. Although this study was an initial step in the identification of the success factors and barriers of implementation of Agile teams, quantitative research can scientifically test this. Since this study was only conducted in one network regime, the outcomes might not be generalized to all organizations. Therefore, quantitative research could both theoretical and empirically contribute to a deeper understanding of this topic. Another recommendation for further research is to study one specific success factor or barrier found within this research. Since the scope of this topic was extendedly, only initial steps were taken to identify the most important success factors and barriers. One example could be to do further research on the amount of autonomy needed for the implementation of self-organizing Agile teams within a network regime. Many studies emphasize several aspects of autonomy when implementing self-organizing Agile teams, however it is not often tested empirically (Hoda, 2011; Moe et al., 2008; McHugh et al., 2012; Kuipers et al., 2010; Castiglione, 2007; Karhatsu et al., 2010). It could therefore be interesting to further study several types of autonomy within self-organizing Agile teams.

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