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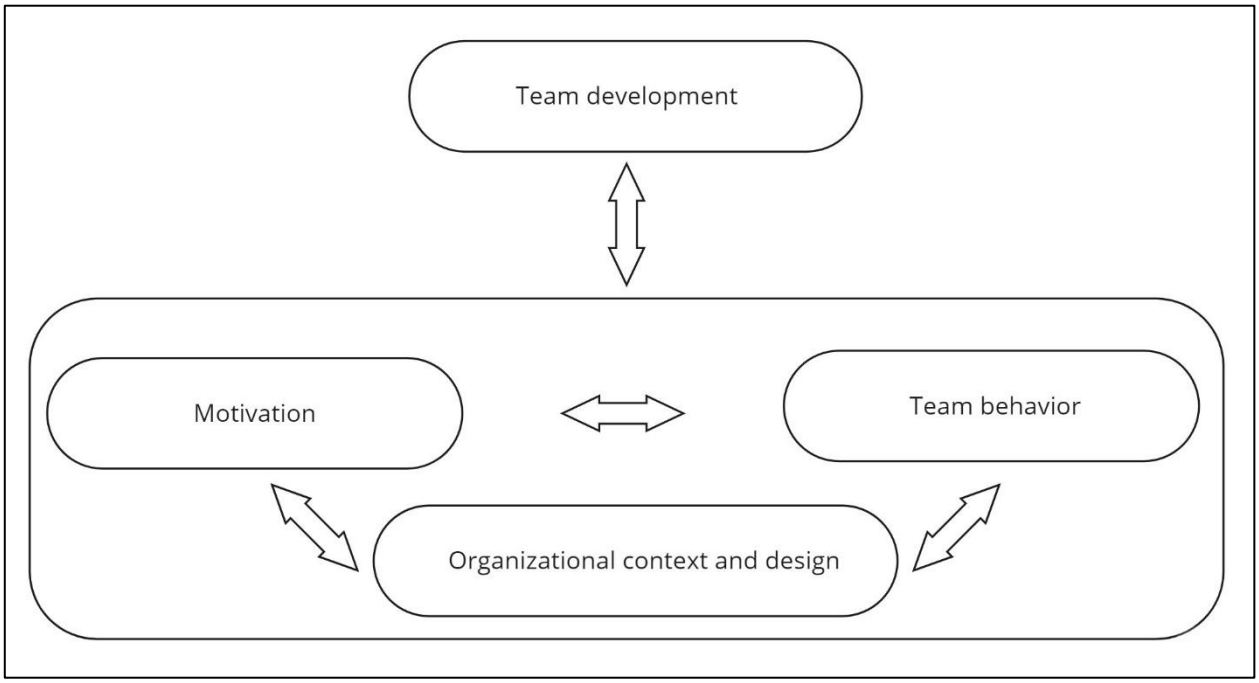

Team-level success factors in agile organizations

A case study on self-managing agile teams in a software company in the automotive industry

Master's thesis in Management and economics of innovation

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Cover: A conceptual framework created by the researchers. It displays categories the team-level success factors are grouped into and how the categories are deducted to interact.

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Abstract

The business environment of today is rapidly moving and is characterized by complexity and uncertainty. These conditions have made numerous companies replace their traditional way of organizing with less hierarchical forms, in attempts of adapting to the new business landscape. In the software development sector, agile methodologies have gained a strong foothold, seeing companies transition their architecture to a more flexible structure built around self-managing teams. Although there is a wide array of studies treating agile methodologies and self-managing teams, there is a scantiness of literature addressing empirical research on self-managing teams in an agile context and what they consider as the factors making their teams successful. Furthermore, multiple papers treat factors that mediate a team's success, however, few of them consider these factors' order of importance or how they can be measured. This research departs from previous studies on self-managing teams in agile organizations and aims to bridge the mentioned knowledge gap.

In this study, Zenseact, a software development company in the automotive sector, is investigated in a single-case research project. Since its birth, Zenseact has embraced the new business environment by employing agile methodologies and the traditional company departments have been discarded in favor of self-managing teams in a dynamic organizational structure. With this background, Zenseact has been deemed an appropriate organization for investigation, and to explore what makes their self-managing teams successful. Followingly, the researchers distilled the company's ambition down to three research questions:

- *What are the team-level success factors in self-managing agile teams?*
- *What method(s) can be used to measure the employees' perception of these success factors?*
- *Which team-level success factors do employees regard as most important for their team´s success?*

The researchers approached the study by first constructing a conceptual framework, which served as guidance for the data collection and the analysis. Secondly, data on the employees' perception of success and what makes their teams successful was collected through interviews, observations, a survey, and company documents. Thirdly, the collected data was contrasted against literature. Finally, how the findings contribute to research and practice was elaborated upon.

In general, the factors making teams successful at Zenseact were aligned with the factors presented in literature, although with some deviations. The data collection resulted in 15 different success factors. Among these 15, the five that were considered the most important were: *Trust, Communication, Respect, understanding, and acceptance, Task satisfaction,* and *Team morale*. Furthermore, the study suggested that the success factors, through their intangible nature, are difficult to quantify, but could be measured through reoccurring self-evaluation surveys, where the direction of change in satisfaction is studied. The primary insights from this study are that the strict interpersonal success factors (e.g., trust, communication, and respect, understanding, and acceptance) are considered predominantly crucial for the success of self-managing agile teams. This brings further understanding to the field, as these factors have previously been portrayed as important for a team's success but without regards to their order of significance.

Keywords: Team level success, Self-managing teams, Agile teams, Teamwork, Team-level success factors

Acknowledgements

Writing these acknowledgments marks the end of our academic era at the Management and Economics of Innovation program at Chalmers. Therefore, they are written with great joy and nostalgic pride, reminiscent of what we have achieved during our studies with the help of great people.

The following master thesis has been an enriching experience providing us with great experience, insights, and learnings. However, we have not walked this journey alone, and several people have supported us throughout it that deserve to be thanked. First, we want to thank all participating employees at Zenseact for their participation and encouragement throughout the thesis. Special thanks go out to Elisabet Eriksson, our supervisor at Zenseact, for trusting us to research team-level success factors at their company. Furthermore, we thank her for her support and dedication throughout the research period. Constantin Bremer, our supervisor at Chalmers, also deserves special thanks for engaging and coaching us through challenging times during the research. He has been a true guiding light in our research, giving us input and ideas on all levels.

Overall, we are genuinely grateful for the opportunity to research the great agile teams at Zenseact and contribute to reaching zero collisions faster. We trust that this experience will be of high value in our upcoming careers.

August Jonsson and María Rán Ragnarsdóttir, Gothenburg, June 2022

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Vocabulary

Following are explanations of terms used throughout the thesis. Some of them are a part of the SAFe terminology.

Agile release train (ART) – A team of agile teams organized around defined value streams. The train works incrementally, and the value stream is built up of all actions that provide value for the customer.

Confluence – Zenseact's collaboratively managed pages for teams, ARTs, product development and common processes. It is web-based and used to share information, tools for collaboration, the operational framework, and other information essential for the organization.

Engineering Manager (EM) – Manager responsible for the overall operation of the teams and individuals in his/her team. One EM can serve as a leader for multiple teams.

Microsoft Teams – Business communication platform provided by Microsoft. It includes video conferencing, workplace chat, file storage, and other integration of Microsoft solutions.

PI Planning – PI stands for Program increment, referring to a period where each ART delivers incremental value by putting out working and tested software. PI planning is, therefore, a series of events where the coming PI is planned by aligning the vision and mission of each ART.

Product Owner (PO) – An associate of the agile team liable for defining Stories and prioritizing the Team Backlog. The PO aims to streamline the undertaking of program priorities while preserving the conceptual and technical integrity of the components and features for the agile team.

Retrospectives – Meetings occur at the end of a project or a project increment. The aim is to make teams reflect on how the project was executed, focusing on making improvements for future project work.

SAFe – The Scaled Agile Framework®, a framework including a set of workflow patterns and organizational processes. The framework aims to guide organizations in scaling agile and lean practices.

Scrum Master – A servant leader and coach for an agile team. He/she ensures that agile methodologies are known and followed. In addition, the Scrum Master removes obstacles and fosters an environment that stimulates continuous learning.

Slack – A messaging program built for communication in workplaces. It has various features, including open or closed chat rooms organized by different topics called channels, direct messaging, and private groups.

Sprint – A short period where agile teams working with Scrum complete specific tasks.

Sprint Planning –A planning session where agile teams plan the upcoming sprint.

The Zeniverse – A dynamic world designed to display Zenseact's organizational structure. It has a molecular design showing the teams and employees, composing them and how they are connected within the ARTs.

Ticket – Refers to an outline of a specific agile task written on a “ticket”.

1 Introduction

The following chapter presents the introduction and the background to the field of research. Furthermore, it introduces the objectives, problem statements and delimitation in the sample and scope.

1.1 Background

The business climate of today has encouraged a change in companies' way of organizing. The traditional hierarchical organizational structure has been deemed as too rigid, making it difficult to adapt to the ever-changing direction of industries and thus paving the way for flatter organizational modes. Often these organizational modes are built around self-managing teams (Bernstein et al., 2016; Lee & Edmondson, 2017).

In software development, the agile perspective has emerged as a challenger to the standardized and rigid engineering process and provides a different view on how to conduct business (Moe et al., 2008). Agile methodologies emphasize flexibility, functioning software, client cooperation, and communication (Beck et al., 2001). Since its introduction in 2001, it has proliferated to numerous industries and is today not only limited to software development. A wide array of research has studied agile methodologies and organizations' transition to them and has, among other things, treated their impacts, benefits, and shortcomings. One prominent characteristic of the agile way of working is the removal of the traditional organizational hierarchy, with a division of labor into self-managing teams. Studies of self-managing teams have displayed several advantages, such as heightened satisfaction among employees, fostering innovation, and increased productivity (Moe et al., 2008).

Although there is a plethora of studies on agile methodologies and self-managing teams, many of them treat the transition phase and state requirements for a successful transformation. Furthermore, a body of literature discusses success factors in agile organizations and within self-managing teams. Success is categorized as either a product of process – learning, job satisfaction etc. (e.g., Edmondson, 1999; Gilson & Shalley, 2004) – or as a product of outcome, e.g., meeting project goals and delivering on time (e.g., Wageman, 1997; Hamdani & Butt, 2018), or a combination of them (e.g., Sundstrom et al. 1990; Guzzo & Dickson, 1996). However, there is a scarcity of literature doing empirical research on self-managing agile teams, looking into how the success factors are perceived and what success factors are perceived as the most important for the team-level success (Dikert et al., 2016).

1.2 Aim

This study aims to increase the understanding of what makes self-managing teams in agile organizations successful by focusing on the team members' feelings and perceptions of team-level success and the factors contributing to it. Further, it seeks to provide insights on what methods can be used to measure these success factors. In addition, this research aims to provide recommendations to individuals in leadership positions and within HR departments, on how agile companies can utilize the success factors found more triumphally. That will be done as part of the conclusions.

1.3 Research questions

To achieve the previously presented aim, the research is set out to answer the following three research questions:

RQ1: What are the team-level success factors in self-managing agile teams?

RQ2: What method(s) can be used to measure the employees' perception of these success factors?

RQ3: Which team-level success factors do employees regard as most important for their team´s success?

All three questions take on a team-level perspective, focusing on grasping employees' feelings and experiences towards what factors make their team(s) successful. Furthermore, the research questions are connected, so that RQ3 will be based on the success factors identified in RQ1.

1.4 Delimitations

The study was focused on the team level, thus not laying emphasis on the individual or the organizational level. Therefore, how teams manage their interactions with other teams and other parts of the organization were not investigated as a part of this research. In addition, the focus of the study was on the success factors of self-managing teams in agile organizations, and no weight was being put on the challenges associated with this management model or cross-team collaboration.

2 Theoretical background

This section treats the literature used for the research. It presents literature regarding agile methodologies, teams, self-managing teams, success definitions, and success factors. The section ends with the development of a conceptual framework, which is later used for the analysis in chapter 5.

2.1 Agile methodologies

This chapter depicts agile methodologies together with their underlying values and principles. Agile methodologies were initially established by a group of software development professionals who had become weary of the traditional rigid software development procedures and after a weekend's joint conference introduced novel approaches to the endeavor (Highsmith, 2001). Beck et al. (2001) explain that agile methodologies aim to be "lighter" than conventional software development methods and are built on trust, respect, cooperation, and organizational structures centered around the people. Agile methodologies counter traditional waterfall approaches to software development by working cyclically, trying to reduce the cost of change (Highsmith & Cockburn, 2001). Bredillet (2013) pleads that one distinct aspect of agile methodologies is that they recognize that the world cannot be viewed as mechanistic and thus, linear thinking-based solutions cannot solve the problems of a rapidly changing and uncertain business environment. Therefore, agile methodologies are less effective in routine procedures and operations – they prosper in environments of high dynamism (Rigby et al., 2016).

Since their introduction in 2001, agile methodologies have proliferated and can now be seen in a wide array of industries (Rigby et al., 2016). Dingsøyr et al. (2012) further state that their growth and adoption compared to any other methodology is unparalleled. Some of the commonly used agile methodologies are Scrum, Extreme Programming (XP), and Lean Development, which all possess different features and modes of operation. However, despite these distinctions, all these methodologies aim to address the central parts of the agile manifesto (Dingsøyr et al., 2012). Moreover, Rigby et al. (2016) reason that the focus of agile has shifted from solely being a small-scale project management methodology to an organizational structure which is characterized by flexibility, enabling companies to better maintain viability in a hectic business climate.

2.1.1 The Agile manifesto

Williams and Cockburn (2003) postulate that at their core, agile methodologies concern embracing a dynamic and complex landscape rather than refusing it. The methodologies, through their nimbleness, provide more efficient means of achieving the ultimate objectives of quality and customer satisfaction (Williams & Cockburn, 2003). Agile methodologies rest on four foundational values, serving to guide organizations embracing the methodologies. The values are presented in the manifesto composed by the seventeen software development professionals (see Figure 2.1):

- *Individuals and interactions over processes and tools.*
- *Working software over comprehensive documentation.*
- *Customer collaboration over contract negotiation.*
- *Responding to change over following a plan.*

Figure 2.1: The values from the agile manifesto (Source: Beck et al., 2001).

Although the items on the right-hand side of the bullet points could be interpreted as being deemed unimportant by the authors, that is not the case. Beck et al. (2001) describe that these matters, which may be construed as rather traditional organizational processes, are meaningful but the items on the left-hand side are of higher significance. In a rapidly changing business climate, the left-sided values are essential, hence they are emphasized in the Agile manifesto (Beck et al., 2001).

2.1.2 Agile principles

Together with the introduced values, twelve principles for agile methodologies were presented by the software development professionals (see Figure 2.2):

1. *Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.*
2. *Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.*
3. *Deliver working software frequently, from a couple of weeks to a couple of months, with a preference for the shorter timescale.*
4. *Business people and developers must work together daily throughout the project.*
5. *Build projects around motivated individuals. Give them the environment and support they really need, and trust them to get the job done.*
6. *The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.*
7. *Working software is the primary measure of progress.*
8. *Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.*
9. *Continuous attention to technical excellence and good design enhances agility.*
10. *Simplicity – the art of maximizing the amount of work not done – is essential.*
11. *The best architectures, requirements, and designs emerge from self-organizing teams.*
12. *At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.*

Figure 2.2: The agile principles from the agile manifesto (Source: Beck et al., 2001).

2.1.3 Scaled Agile Framework

As previously stated, agile methodologies were initially introduced as a small-scale project management model. The organizational model has since gained traction and has been adopted and applied in larger projects and through entire organizations (Rigby et al., 2016). However, there are some issues arising when applying agile to larger projects and organizations. Dikert

et al. (2016) describe how larger projects have demands for more coordination, particularly in-between teams, and agile methodologies may cause difficulties interfacing with other parts of the organization. Further, Hamdani and Butt (2018) argue that the culture and values required to fully embrace agile methodologies pose an obstacle for organizations' successful adoption of the methodologies.

An attempt aiming to facilitate the usage of agile methodologies for larger organizations is the Scaled Agile Framework (SAFe), a consulting-based framework for implementing agile methodologies on a grander scale. The current SAFe has four levels which organizations can choose to build their agile foundations on: Essential, Large Solution, Portfolio, and Full (SAFe, 2022). However, SAFe (2022) clearly states that they mainly provide a platform for organizations to build their agile foundation – each organization that adopts the framework is responsible for adjusting it to its individual goals and needs.

According to SAFe (2022), organizations that adopt the SAFe should be organized around identified value streams, and instead of conventional departments, the organization should be divided into Agile Release Trains (ART) formed around the value streams. The ARTs are further composed of multiple agile teams, all contributing to the common goal of the value stream they follow (SAFe, 2022). Both agile and SAFe methodologies have a strong emphasis on teamwork, and teams are at the center of the organization. Followingly, the next chapter investigates these subjects in more detail.

2.2 Teams

Any process entailing human interaction, such as software development, substantially relies on team accomplishments. Typically, configuring a work team is encouraged by benefits such as higher employee satisfaction, increased innovation, and raised productivity (Moe et al., 2010). Katzenbach and Smith (1993) describe how a team is not just any collection of people working together and argue that a team's performance is an aggregate of the individual members' performances and the joint results. The following definition of a work team is provided (Katzenbach & Smith, 1993, p.2):

"A team is a small number of people with complementary skills who are committed to a common purpose, set of performance goals, and approach for which they hold themselves mutually accountable."

A team's most crucial trait is having a common commitment, making the members work as a team rather than as individuals (Katzenbach & Smith, 1993). Sundstrom et al. (1990, p. 2) define teams as "interdependent collections of individuals who share responsibility for specific outcomes for their organizations" and advocate that there are four general categories where work teams may be employed. These categories are advice and involvement, production and service, projects and development, and action and negotiation (Sundstrom et al., 1990).

Many companies have transitioned their organization to a team-based structure, and Guzzo and Dickson (1996) state that a plethora of evidence indicates that doing so is correlated with a higher organizational effectiveness. However, important to note is that teams may take various architectures and are assigned to do very different tasks. Therefore, teams in separate organizations and environments may be widely dissimilar (Mathieu et al., 2008). Mathieu et al. (2008) further advocate that the heterogeneity within a team may be just as extensive as the heterogeneity between different types of teams. Based on this reasoning, the label "teams" has

multiple implications depending on its context and cannot be studied as one holistic theme. One category of teams that has received plenty of attention over the last years is self-managing teams (SMTs), which will be described in the following chapter.

2.2.1 Self-managing teams

Today's brisk pace of business, together with a growing extent of knowledge work have encouraged less hierarchical modes of organizing. One such approach adopted by companies is to organize the work in self-managing teams (Lee & Edmondson, 2017). Although SMTs have gained plenty of attention recently, the concept is not new; Trist (1981) describes how embryos of SMTs first took form during WW2 and gained further traction during the 1950s. Thus, regardless of the concept's current popularity, the organizing method has been around for quite some time. Furthermore, organizing the work in SMTs is one of the twelve principles of the Agile manifesto presented previously and is crucial to agile development processes (Beck et al., 2001; Lindsjørn et al., 2016).

SMTs are work teams provided with the authority and accountability to perform and govern complete tasks (de Jong et al., 2004). Campion et al. (1993) highlight three factors that distinguish SMTs from other forms of work groups: increased autonomy, functional flexibility, and interdependency between and within teams. Thus, SMTs enjoy more decision-making authority than other forms of team compositions. Members typically have diverse skillsets which enable them to do each other's tasks, and there is a higher reliance on both the internal team members and external teams to progress with the assignments. This diversity and reliance are aligned with Janz's (1999) thoughts, who means that employees in SMTs have a broad skillset that they apply to a group task, and have the authority to decide work methods, scheduling, and the division of tasks among the team members. Guzzo and Dickson (1996) employ a similar description of SMTs and add that SMTs ought to be a distinct social entity within the organization.

Moe et al. (2010) postulate that most customary management models advocate that work teams should be autonomous, and literature presents several rationales for why organizations benefit from using SMTs. Employing SMTs encourages involvement and may lead to a heightened emotional attachment to the company, generating more motivated employees, a raised sense of accountability, increased innovation and productivity, and higher levels of employee satisfaction (Moe et al., 2008; Moe et al., 2010). Wageman (1997) further argues that the inherent autonomy in SMTs improves company performance, organizational learning, and flexibility. Moreover, team members in truly self-managing teams hold themselves personally responsible for their team's work, monitor their own performance, and adjust their strategies to find appropriate solutions to their tasks (Wageman, 1997). Janz (1999) also advocates that the joint learning occurring at the team-level might be crucial for obtaining an enhanced work output.

There are, however, obstacles to employing SMTs. For example, Janz (1999) advocate that SMTs may be susceptible to the circumstances in which they are applied and Moe et al. (2008) postulate that expertise skills and the corresponding work division act as the main barrier for teams to achieve self-management. As mentioned in 2.2, evidence indicates that employing a team-based structure is associated with a higher level of organizational effectiveness and an enhanced output (e.g., Moe et al., 2010; Wageman, 1997). However, what is meant by the terms 'effectiveness' and 'success' seems to differ depending on the author. This issue is investigated in the coming chapter.

2.3 Team success

As tapped into in 2.2.1, the term ‘success’ has multiple meanings, with the word possessing a somewhat subjective signification, and literature failing to present a united definition of the term. In the context of teamwork, success is typically seen as a product of either outcome, such as meeting requirements (e.g., Hoegl & Gemuenden, 2001), of team behavior and processes, such as work satisfaction and learning (e.g., Edmondson, 1999), or a combination of them both (e.g., Sundstrom et al., 1990). A wide array of literature also employs the term ‘effectiveness’ (e.g., re:Work, n.d.; Sundstrom et al., 1990, Campion et al., 1993; and Mathieu et al., 2008). The descriptions of effectiveness in literature possess almost identical phrasings as the descriptions of success – it is typically either seen as output-focused or inter-team processes and interactions are emphasized. The Oxford English Dictionary (n.d.) describes ‘effective’ as “producing a notable effect”. This can be compared to the definition of success, which says “the prosperous achievement of something attempted” (Oxford English Dictionary, n.d.). The terms evidently possess similar linguistic characteristics, although the term success implies an element of intention and goal setting, which is not included in the definition of effectiveness (effective), which is portrayed more vaguely. However, brought into a team context, the differences between the terms can be argued to diminish. Thus, for the remainder of this paper, the terms may be used interchangeably, referring to the same concept.

Hoegl and Gemuenden (2001) define success of a particular project as an aggregate of delivering a good project outcome, meeting requirements, achieving a timely delivery, and not exceeding cost estimates, which evidently puts emphasis on the outcome-based element of success. This perspective is shared by, e.g., Hamdani and Butt (2018) who describe success as effective completion of a project, and Wageman (1997) who connects success to performance measures such as customer satisfaction, quick response time to customer calls, and keeping costs low. The presented depictions portray success as a rather tangible value, whereas processual and behavioral attributes rather are seen as means to reach the desired state.

On the contrary, Sundstrom et al. (1990) add viability, i.e., team members’ satisfaction and prospects of continuing in the team, as an element of team effectiveness and argue that definitions only treating performance-based values neglect the possibility of a team burning itself out. Chow and Cao (2008) extend these ideas and introduce a detailed view of success divided into four distinct dimensions: Organizational, People, Process, and Technical, and thus accredit success’s more behavioral attributes. Along the same lines, Campion et al. (1993) suggest that there is a trade-off between psychological and engineering approaches to effectiveness. The psychological approaches emphasize improving values such as work satisfaction, whereas the engineering modes typically are interested in increasing efficiency. Hence, a trade-off between the approaches has traditionally arisen. If a work team, however, can pertain to both approaches, a more viable and holistic view on effectiveness may be obtained (Campion et al., 1993). Guzzo and Dickson (1996) likewise embrace a multi-dimensional depiction of effectiveness. They advocate that effectiveness is indicated by both the output produced by the team, the consequences the team has for its members, and the improvement of a team’s capacity to be effective in the future (Guzzo & Dickson, 1996).

Moreover, Mathieu et al. (2008) accentuate that achieving objectives and using performance metrics are not relevant for all teams. Both time, e.g. time duration of outcome data collection, and team behaviors must be considered (Mathieu et al., 2008). As mentioned, behavioral, or processual, factors are often considered qualifications or mediators stimulating the outcome, but in some instances they could themselves be considered success factors. This is supported

by Gilson and Shalley (2004), who argue that fostering creativity can be seen as success, and with Edmondson (1999) who emphasizes learning as a success.

In this report, the researchers have adopted a similar perspective of success as described by e.g., Sundstrom et al. (1990), Campion et al. (1993), and Guzzo and Dickson (1996). Success is seen as both related to the work teams' output, but also considers the team-behavioral and processual attributes such as work satisfaction and enjoyment. Using this definition of success, the next chapter presents factors for SMTs needed to obtain it.

2.4 Success factors for self-managing teams

Regardless of how success is defined, certain conditions and requirements must be in place to reach the desired state. These requirements and conditions have been labeled 'success factors'. Thus, a distinction is made between success, which is the desired outcome (e.g., work output and work satisfaction) and success factors, which portray elements nurturing or mediating this desired outcome. The eleventh agile principle explicitly states that work should be arranged around SMTs (Beck et al., 2001). Thus, although not all SMTs are working according to the agile methodologies, the success factors for SMTs are assumed to apply to agile teams as well. An agile team is, roughly speaking, considered an SMT working in accordance with the agile methodologies. This chapter presents literature on success factors for SMTs, which are then used to construct a conceptual framework, which is presented in 2.5.

Sundstrom et al. (1990) explain how team effectiveness is dependent on organizational context, boundaries, and team development. For a team to be effective, contextual factors such as reward systems and training must be in place, and there is also a need for certain delineations between a team and its external environment. Furthermore, teams must continuously adapt to their context both by setting norms and cultures (Sundstrom et al., 1990). Campion et al. (1993) present five general characteristics that correlate with work team effectiveness. The first one is job design and relates to the motivational aspects of designing the job, such as participation, the importance of tasks, and task variation. Secondly, interdependence is highlighted as an essential characteristic. Interdependence concerns teams' reliance and significance for other teams and could improve effectiveness by raising the motivational elements of the job. Thirdly, team composition, including e.g., team size, heterogeneity of members, and diverse skills and experiences is positively associated with performance. Fourth, the external context, such as sufficient training for team members and support from management, is considered consequential for team effectiveness. Lastly, process – how the team manages the tasks at hand through, e.g., communication and cooperation within the group – is crucial for the team's success (Campion et al., 1993). Furthermore, Dingsøyr et al. (2016) put forward five factors which they state strongly impact a team's performance. These are team coordination, goal orientation, cohesion, shared mental models, and team learning.

In a study aimed at examining how to create exceptional SMTs, Wageman (1997) ascertains seven factors deemed pivotal: a clear direction, a task designed for a team, team rewards instead of individual rewards, material resources, authority to be self-managing, common goals, and norms promoting strategic reasoning. Moreover, the team's design and individual traits are important, especially for being able to self-manage, and poorly designed team e.g., a team that is composed of individuals without the characteristics mentioned in 2.2.1, will have a worse ability to do so (Wageman, 1997). Moreover, Hoegl and Gemuenden (2001) investigate how teamwork quality relates to the success of innovative projects. They mean that teamwork quality is a measure of the collaboration in teams and that the concept consists of

communication, coordination, the balance of member contribution, mutual help and support, individual efforts contributing to the team's effort, and cohesion within the team. These elements are substantially associated with both the team's output and the members' personal triumph (Hoegl & Gemuenden, 2001).

Furthermore, in 2012, Google embarked on a journey to crystallize what makes an effective team (Duhigg, 2016). With most of the company's work being conducted in teams, the study thus provided valuable input to the whole organization's endeavors (re:Work, n.d.). The research concluded that the foremost important factor for an effective team is psychological safety – a consensus among team members that they may take risks without causing personal loss of e.g., reputation (Edmondson, 1999). Further, being able to trust that all team members do their part on time and finding the team's work meaningful is considered important. Correspondingly, seeing that the team's work is making an impact, and lastly, that every member fully understands the assignment at hand, are important elements for a successful team (re:Work, n.d.). Furthermore, in an attempt to measure the quality of teamwork, Dickinson and McIntyre (1997) exhibit a conceptual framework of crucial success factors for teams. The framework consists of three processual states of a team's working process: input, throughput, and output. At the baseline of this framework is communication, which permeates the factors on all levels. Input factors of the teamwork construct are team orientation and team leadership. Throughput factors are monitoring, feedback, and backup, and coordination is the sole output factor. As stated, communication is a substantial enabler for all the steps, and by the end the whole process should lead to a learning loop (Dickinson & McIntyre, 1997).

Regardless of how the different articles are portraying success, the factors for reaching it are similar, i.e., the success factors do not differ substantially depending on how authors' are treating success. Thus, in the following chapter describing the conceptual framework, the success factors are treated equally without consideration to how success is outlined in the individual papers.

2.5 Developing a conceptual framework of success factors for SMTs

Several of the articles presented in the previous chapters treat similar or identical factors deemed pivotal for successful SMTs. Based on the introduced success factors from literature, a conceptual framework for describing success factors for SMTs has been constructed using the factors stated in seven separate articles: Sundstrom et al. (1990); Wageman (1997); Dickinson and McIntyre (1997); re:Work (n.d.); Campion et al., (1993); Hoegl & Gemuenden, 2001; and Dingsøyr et al. (2016) (Figure 2.3). These articles were specifically chosen as they have the team-level success perspective and have crystallized success factors. Table 2.1 below, portrays the factors from each paper and how they fit into the categories of the framework. The success factors in each category have further been synthesized in Table 2.2, also to be displayed below.

Table 2.1: Success factors from literature and how they fit into the categories of the framework.

	Sundstrom et al. (1990)	Wageman (1997)	Dickinson and McIntyre (1997)	re:Work (n.d.)	Campion et al. (1993)	Hoegl and Gemuenden (2001)	Dingsoyr et al. (2016)
Organizational context and design	- Managing team boundaries. - Physical environment. - Task design. - Training. - Organizational culture.	- Physical environment. - Task design. - Authority to self-manage.		- Understanding the task.	- Authority to self-manage. - Team size. - Team composition. - Training. - Managing team boundaries.		
Team behavior	- Norms regarding behavior. - Communication. - Feedback.	- Norms promoting strategic thinking.	- Coordination. - Helping attitude. - Monitoring performance. - Communication. - Feedback.	- Trust team members to complete their tasks.	- Communication. - Feedback. - Helping attitude. - Workload sharing. - Trust in the team's ability to be successful.	- Exploit member expertise. - Norms concerning effort and prioritizing. - Helping attitude. - Coordination. - Communication.	- Coordination. - Shared mental models. - Communication. - Feedback.
Motivation	- Defined mission within the organization. - Team rewards.	- Performance goals. - Understanding of team's purpose. - Team rewards.	- Team orientation.	- Finding meaning in the work. - Seeing impact.	- Individual goals connected to the team's. - Task dependency. - Task importance. - Task variety. - Seeing impact.		- Common purpose. - Performance goals.
Team development	- Leadership. - Cohesion.		- Leadership.	- Psychological safety.			- Team learning. - Cohesion.

Table 2.2: Synthesized success factors from literature.

	Success factors from literature:
Organizational context and design	- Physical environment. - Task design. - Training. - Authority to self-manage. - Managing team boundaries. - Understanding the task. - Team size. - Team composition. - Organizational culture
Team behavior	- Communication. - Feedback. - Helping attitude. - Coordination. - Norms regarding behavior. - Norms promoting strategic thinking. - Monitoring performance. - Trust team to perform. - Workload sharing. - Exploit member expertise. - Shared mental models.
Motivation	- Common mission/purpose. - Team rewards. - Performance goals. - Seeing impact. - Finding meaning. - Team orientation. - Task dependency. - Task variety. - Task importance.
Team development	- Leadership. - Cohesion. - Psychological safety. - Team learning.

This chapter presents the components of the conceptual framework in detail and how they interplay. At the bottom of the framework is *Organizational context and design*, which represent the most foundational elements. Upon fulfillment, this category enables the next layer: *Team behavior* and *Motivation.* These three categories are further thought to interact as a positive impact in one of them likely positively affects the other ones. At the top layer of the figure is *Team development* which may be obtained by satisfying the lower-level factors. It should be noted that this is the researchers' interpretation of the literature and as several success factors are interrelated one could argue that they fit into more than one category. Figure 2.3 below displays a visual representation of the described conceptual framework. The arrows indicate how the success factors are believed to impact each other.

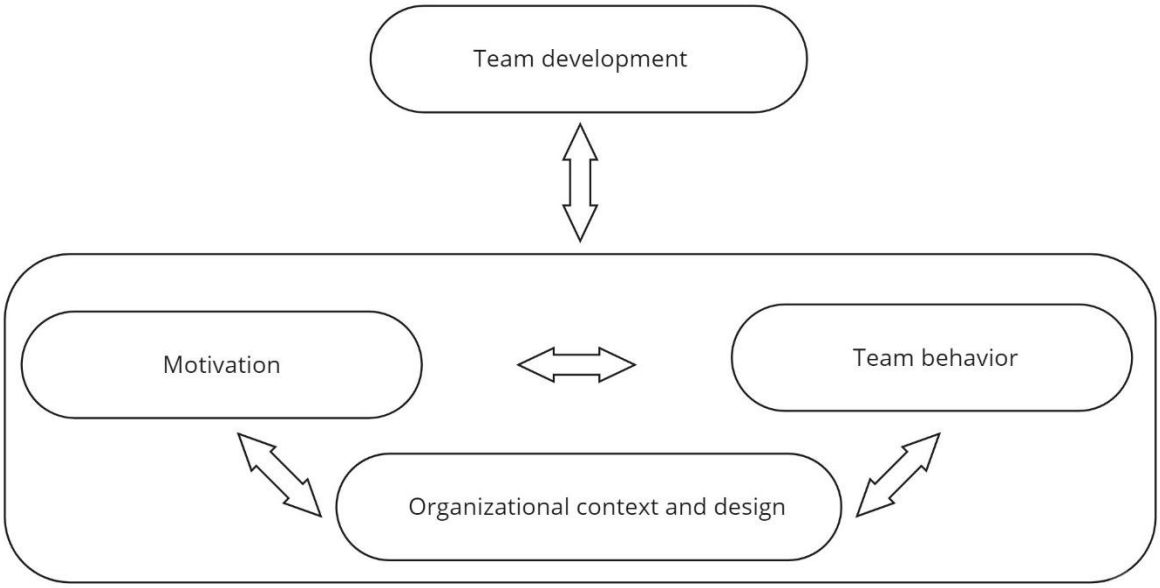

Figure 2.3: The framework categories and how they are deduced to interact.

2.5.1 Organizational context and design

The first critical feature of successful SMTs has been labeled *Organizational context and design* and relates to context- and design aspects required to be in place for team success to occur. This factor includes Wageman's (1997) depictions of elementary physical resources for conducting the work; that the assignment ought to be designed to be solved by a team; and that the team possesses the authority to decide on how to approach the task at hand. Further, Campion et al. (1993) discuss job design as a critical feature of team success. Similar to Wageman (1997), this includes that teams should be able to manage themselves, that every member may participate in decisions and that the team jointly works to complete assignments. Further, both Wageman (1997) and Campion et al. (1993) accentuate that autonomy may be an enhancer of the team's motivation. However, the level of autonomy a team possesses is in the end the decision of the organization, which is why it is placed in this category.

Campion et al. (1993) further describe how it is substantial that the teams are neither too small nor too large and include individuals with a preference for teamwork. The team should include just enough members required to achieve its goals. Team members should further have heterogeneous abilities and experiences and have broad competencies, enabling them to do each other's tasks. Furthermore, the teams must receive training in, e.g., team philosophy and technical skills, and get the resources required to make the team function properly. On the same

theme, re:Work (n.d.) advocate that, to obtain effective teams, it is of high importance that individual team members grasp what is expected of them and how to meet these expectations. Likewise, it must be understood how one individual's work relates to the whole team's performance (re:Work, n.d.).

Sundstrom et al., (1990) employ a slightly higher level of abstraction and advocate how boundaries between teams and their organizations are essential for reaching effective teams. These act as points of exchange with external parties and separate a work team from others. This is supported by Campion et al. 1993) who argue that supervision of team boundaries and ensuring that the teams are well integrated with the external organization are important elements of team effectiveness (Campion et al., 1993). Furthermore, Sundstrom et al., (1990) emphasize other contextual factors, aligned with Wageman (1997) and Campion et al. (1993), such as physical environment, autonomy, task design, and training as valuable for enhancing effectiveness. Beyond these factors, organizational culture, described as the organization's collective values and norms, is a major determinant of a team's effectiveness (Sundstrom et al., 1990). All factors described in this paragraph have in common that they are characteristics that primarily are in effect on a higher level of abstraction than the single team – they are generally the responsibility of the organization, and it would assumingly require decisions and actions on this level to stimulate or affect them. Although there may be exceptions, with single teams possessing authority to decide on some context- and design factors, it is still argued that the larger organization ultimately is held accountable for these.

2.5.2 Team behavior

The second category of the framework is labeled *Team behavior*. Included in this category are factors that concern team processes, interactions, and norms. Hoegl and Gemuenden (2001) explain that for achieving optimal circumstances for success, a team warrants all its members to fully exploit their expertise, and the contributions of individual members must be balanced thereafter. Norms regarding effort, prioritizing tasks, and coordinating them, are further required, together with an attitude of helping (Hoegl & Gemuenden, 2001). Moving further into norms, Wageman (1997) states that team norms should encourage strategic thinking, as team members must be able to scan their environment to detect problems and develop new ways of working. Sundstrom et al. (1990) likewise mean that norms concerning how to behave that all team members agree on are decisive for obtaining effective teams. Dingsøyr et al., (2016) argue that coordination is important for team success, which they mean can be obtained by having shared mental models within the team. Shared mental models portray common knowledge within the team, enabling them to understand each member's tasks, and harmonize and synchronize actions. Coordinating team activities and supporting struggling team members to perform their tasks is likewise considered vital by Dickinson and McIntyre (1997) who frame it as a critical success factor for the team, which is facilitated by the satisfaction of other success factors. Furthermore, team members should observe and be aware of what activities are performed. The performance of team members should also be monitored by other members for constructive teamwork to arise (Dickinson & McIntyre, 1997).

Campion et al. (1993), further rate communication as pivotal for effective teams, which is also supported by Sundstrom et al. (1990). As mentioned in 2.4, communication is regarded as a critical feature by Dickinson and McIntyre (1997), as they mean it acts as an enabler for all other success factors, enhancing their impact. The essence of communication is likewise put forward by Hoegl and Gemuenden (2001), who add that spontaneous, informal communication is the most valuable, and that all team members must be able to communicate directly with

each other, without the use of middle hands. Dingsøyr et al. (2016) mean that a project's outcome is enhanced by an increased amount and quality of communication and that team performance may be improved by receiving periodical feedback. The significance of feedback is further highlighted by several authors. Sundstrom et al. (1990) consider feedback a critical component of an effective team and notes that it must be accurate and presented timely. This is supported by Campion et al. (1993), who describe that feedback regarding a team's performance may encourage team-oriented behavior, and by Dickinson and McIntyre (1997), who state that a team must reflect and learn from their past actions to be successful.

Another important parameter is trusting your team members' abilities to complete their work with good quality and within the decided time frame (re:Work, n.d.). Along the same line, Campion et al. (1993) discuss how social support, i.e., having a helping attitude, within the team is a significant factor for obtaining successful teams. Furthermore, team effectiveness can be improved by members being able to share their workload with each other, and that the team itself believes it can be successful in its tasks (Campion et al., 1993).

The factors elaborated in this section are mainly psychological factors concerning teams' inter-member behavior. Most of the factors are either on the team- or individual-level of abstraction, and actions on these levels may impact team effectiveness.

2.5.3 Motivation

The third category of the framework is *Motivation.* This category consists of factors that serve to increase the motivation among team members, which is argued to lead to more successful teams. Sundstrom et al., (1990) state that a defined mission, synchronized throughout the organization, is a prerequisite for creating effective teams and may boost team members' drive. Dingsøyr et al., (2016) bring the same argument down to a team-level and point to the significance of a common purpose within the team, along with long-range performance goals and milestones. The purpose and the objectives ought to be determined by the team themselves and serve as guidance for the team's work. This view is supported by Campion et al. (1993) who break down the analysis one step further and mean that team members' individual objectives should be connected to the team's to raise motivation and reach optimal effectiveness. The same benefits arise from interdependencies between members' individual tasks and the team's tasks – members' work should depend on other members' work (Campion et al., 1993). In a similar line of reasoning, Wageman advocate that an understanding of the purpose of the team's existence and what it is meant to achieve, together with clear performance goals are critical success factors for SMTs. This understanding somewhat resembles Dickinson and McIntyre's (1997) notion of 'team orientation', which is framed as members' attitudes towards each other and themselves as team members. Sundstrom et al. (1990) advocate that rewarding the team for its performance is significant for its success, which is supported by Wageman (1997) who also states that the team, rather than its individual members should be rewarded for triumphs.

Furthermore, re:Work (n.d.) presents that finding either the work itself or the work output meaningful is essential for enhancing a team's effectiveness. This meaning could also be related to another factor described by re:Work (n.d.), which is seeing the impact the team's work has on the organizational output. This factor is supported by Campion et al. (1993), who mean feeling that the team tasks are important, varies in nature, and have an impact on the final product are important elements for obtaining successful teams. The factors described in this paragraph concern both the team-level and the organizational level and are thought to be changeable on these levels.

2.5.4 Team development

Ultimately, the stimulation of the previously described categories should beneficially lead to the team excelling and evolving as a working unit. Factors contributing to this state are put into the fourth overarching category: *Team development.* One factor in this category is 'psychological safety' (re:Work, n.d.), described previously. This is a rather broad term, encapsulating several of the team's behavioral factors (e.g., norms and communication), but also adds an element of trusting your team members not to ridicule you for taking risks or making mistakes, which is seen as contributing to a desirable and prosperous team environment (re:Work, n.d.). Psychological safety was further seen as the foremost important factor for team effectiveness at Google.

Dingsøyr et al. (2016) describe another critical feature of a team's success as the team members' inclination to remain a team in the future – the team's cohesion, which is a result of both members' commitment and their interpersonal affection and group pride. Cohesion is also emphasized by Sundstrom et al. (1990), who means that cohesion is strongly correlated to communication within the team and adherence to the team norms. Moreover, Sundstrom et al. (1990) illuminate leadership as a significant determinant of effectiveness and a team's development. In a self-managing context, leadership should be shared among the team members and growingly more so as the team evolves over time (Sundstrom et al., 1990). Dickinson and McIntyre (1997) support leadership as essential for a team's success and describe how it provides structure and direction for its endeavors. Leadership is further something that should be exercised by both formal leaders and team members (Dickinson & McIntyre, 1997). Moreover, Dingsøyr et al. (2016) accentuate team learning as critical for both success and as a means for team evolution. Learning improves the team's collective level of knowledge and skills, enabling it to adapt and make changes in a changing environment. The learning process should be ongoing, and it is stimulated by feedback, asking questions, and reflection (Dingsøyr et al., 2016). This also exhibits how the categories interplay, with a successful achievement of Team behavior factors (feedback, asking questions, and reflection) contributes to Team development.

The factors portrayed in this chapter are enablers for teams progressing and developing to an improved state. Several of the factors from the general categories described in the previous subchapters, such as communication, autonomy, and norms, could be seen as prerequisites for reaching a state that stimulates Team development. These factors must be encouraged for team development to occur. Thus, this category is positioned slightly differently than the previous, as it portrays a favorable state achieved by the interplay of factors within the other categories.

3 Method

This chapter impels the chosen research strategy and design along with the relevant quality criteria. In addition, it presents the research process, methods used for data collection, and the ethical aspects of the study.

3.1 Research strategy

Bell et al. (2019) state that a research strategy describes the researchers' approach to their research project. Parts of the research strategy are the philosophical assumptions grounding the research and the methodology used for the research. The researchers address these topics in this section.

There are various theories for the practice of social research, but practically they can be divided into qualitative or quantitative, based on their nature and assumptions of the world (Bell et al., 2019). Quantitative research deductively evaluates theories with extensive data measurements; its epistemic consideration uses the natural scientific model and natural norms, and its ontological considerations view the social reality objectively. Qualitative research focuses on the generation of theory and is interested in understanding how individuals construe their experiences, compared to the quantitative data used in quantitative research (Merriam & Tisdale, 2015). The epistemological considerations of qualitative research are of individuals interpreting their social world and its ontological considerations that the social reality will change based on the individuals' experience (Bell et al., 2019).

This research uses a mixed-methods research strategy, combining quantitative and qualitative research. However, the main body of the research has a qualitative approach and therefore, interpretivism is the epistemological assumption chosen. Furthermore, the research has a constructionist ontological assumption, which is more in line with qualitative studies. A second reason for choosing interpretivism is that the researchers seek to understand the individuals' behavior and how they define success. Therefore, the research aligns with the epistemological considerations of qualitative research.

3.2 Research design

The research aim is to increase the understanding of the employees' feeling and experiences toward team-level success. Therefore, the researchers arbitrated to do a case study taking the team-level perspective. The case company is a software developing company in the automotive industry, employing self-managing agile teams. As the case company has applied agile methodologies and self-managing teams since its birth, the firm has matured with these characteristics, which provides them with a certain uniqueness and makes them an interesting focal firm for research on the subject. This research is a case study, conducted at a single case company. Bell et al. (2019) argue that case studies are typically chosen as research design for investigating single cases in detail.

The research process was conducted in the following order: first, data to answer RQ1 and RQ2 was gathered via interviews using a qualitative research strategy, and second, a company-wide survey was conducted to test the data and answer RQ3. In addition to the described data gathering processes, theoretical data was reviewed to understand which team level-success factors had been identified by other researchers and provide a foundation of analysis for the research questions. Furthermore, to contextualize the data gathered and as the research was conducted on the case company premises, the researchers took on the role of observers during

the research period. They could ergo confirm, or disregard, interpretations of the data gathered. Figure 3.1 visualizes the research process.

As this research uses a mixed-method research strategy, triangulation was used to cross-check assumptions that derived both from the qualitative and quantitative research parts (Deacon et al. 1998). Bell et al. (2019) explain that triangulation is when researchers use multiple data sources and research methods in social research. In this research, the researchers utilized triangulation by using data from interviews, observations, company data, and a company-wide survey.

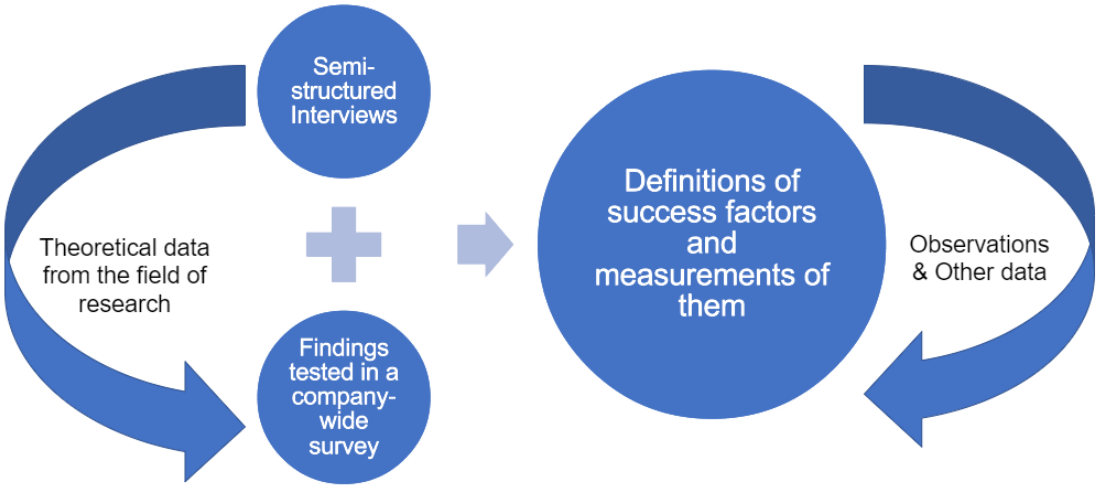

Figure 3.1: Illustration of the research process.

3.3 Empirical context

The research was conducted at a company named Zenseact. Zenseact works with software development in the automotive industry, designing and developing software solutions for autonomous vehicles with a vision to create a safe and reliable real-life autonomous driving platform. Their aim is to preserve life by moving "Towards Zero faster", meaning that by developing autonomous driving technology they can accelerate the move towards zero traffic fatalities.

The first steps towards what now is Zenseact was initiated at Volvo Cars in the 1990s as a development activity to increase automotive safety. In 2017, the department was broken out of Volvo Cars and merged with car safety supplier Autoliv (now Veoneer) into a joint venture called Zenuity. In 2020, Zenuity was split and a part of it became a subsidiary solely owned by Volvo Cars. In addition, the company was rebranded as Zenseact. In July 2021, a change in ownership was announced, with Volvo Cars taking 85% stake and a Chinese connected car technology firm, ECARX, 15%. Zenseact enjoys a certain uniqueness in that it is an agile company that, due to its ownership situation and the fact that they have yet to deliver their product to the market, is not required to generate profits at the time this research was conducted.

Zenseact employs over 500 people, both in their offices in Sweden and in China. The company contrasts the hierarchical line structure, and the organization is built around self-managing agile teams, using terminology and procedures from the Scaled Agile Framework SAFe (Scaled Agile Framework – SAFe for Lean Enterprises, 2022). Nevertheless, it should be noted that the SAFe has not been a source of inspiration until 2021, when the company was rebranded. In accordance with SAFe, the engineering part of the company is divided into five Agile Release Trains (ARTs), where each ART is a team of agile teams which collaborate towards a common goal. Supporting the ARTs are six groups called Business Enablers: Product, People, Data, Security and Digital, Finance, Customer, and the Zenseact leadership team. Figure 3.2 shows the researchers' interpretation of the organizational layout at Zenseact. As the company is built around self-managing teams, Zenseact uses a dynamic molecular-designed world, the Zeniverse, to portray its organizational structure. The Zeniverse is an internal software tool, containing information about teams, their members, ways of working, and interrelationships.

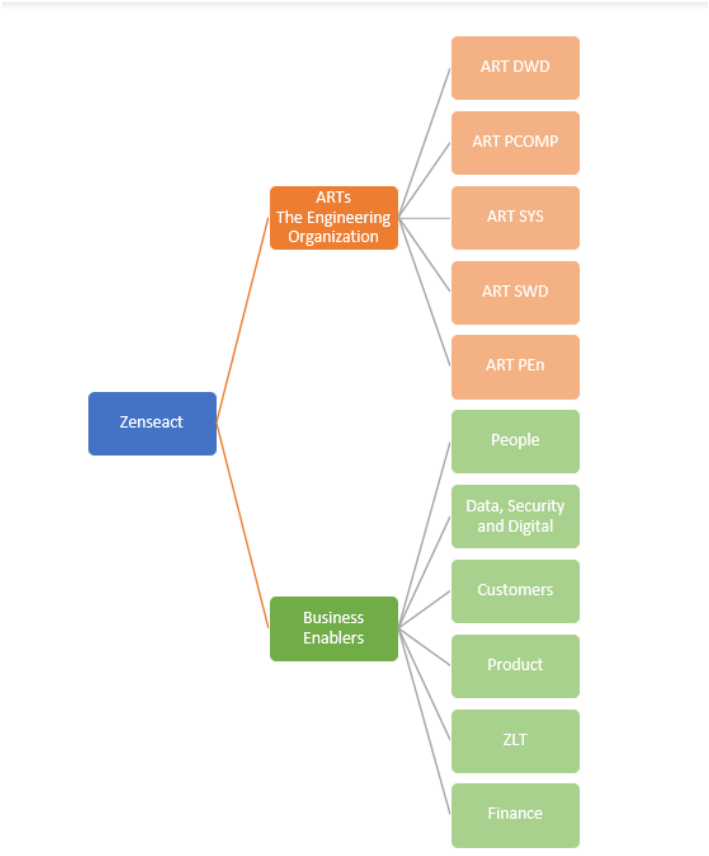

Figure 3.2: The researchers´ interpretation of Zenseact´s organizational layout.

In line with the Agile manifesto, Zenseact's guidelines for teamwork and how to engage teams acknowledges that high-performing teams are the key to success. Furthermore, it is Zenseact's stated belief that high-performing teams develop superior products and are value-adding to the customer. According to Zenseact, the teams are built to be self-managing, empowered, and have cross-competence to increase involvement, reach faster and better decisions, have high efficiency, balanced utilization of skills between team members, and develop mutual responsibility. Since Zenseact's initiation in 2017, it has employed agile methodologies across the whole organization and identifies itself as a people-driven company which is visible in their

everyday motto “People at heart”, indicating that all actions should be taken with “People at heart”.

The researchers’ supervisor from Zenseact holds the role of ART Engineering Manager for one ART. As an ART Engineering Manager, she has connections to other ART Engineering Managers, which provided the researchers immense access to the whole company through prompting, recommending people to talk to, and inviting the researchers to events relevant for the project. Further, the researchers had access to the company premises, intranet, and communication platforms throughout the research process.

3.4 Data collection methods

The following data collection methods were used for this research: interviews, observations, a survey, and inspection of case company data. This section further describes each method used.

3.4.1 Interviews

As the research is based on participants’ views and experiences about team-level success factors, semi-structured interviews were chosen as a primary data collection method to answer RQ1 and RQ2. Consequently, data from the interviews was used to define the team-level success factors and the potential tools for measuring them. All interviews were conducted digitally using Microsoft Teams.

Sample

A convenience sampling method, snowball sampling, was used for selecting interviewees. The reason for employing the snowball sampling method was that the time frame for the data collection was limited, and it was important to interview relevant interviewees to get the needed data for answering the research questions. According to Bell et al. (2019), snowball sampling is a method where researchers begin by sampling a close group of people of relevance to the research questions. These sampled participants are then asked to suggest other possible participants that could be of relevance.

Sampling was done in the ART of the company supervisor to increase the likelihood of getting participants to agree to an interview. All development teams within the case company are agile teams and therefore, hypothetically, teams within the sampled ART should have similar characteristics as other teams within the company. Furthermore, the teams sampled have different responsibilities and work on different parts of the product offering. Thus, it can be argued that the sample represents a larger part of the case company.

The researchers conducted eight interviews in the first data collection round, including a pilot interview. How they are divided between roles can be seen in Table 3.1.

Table 3.1: Roles of the interviewees.

Role	Sample size
Engineering Manager	3
Product Owner	2
Development team member (Developer)	3

Semi-structured interviews

The reason for selecting semi-structured interviews is that they give the participant room to answer the questions how they like, incentivizing that they will share in-dept information about their views and experiences (Longhurst, 2003). In addition, unstructured interviews were deemed unfit because they are often more complicated to code and compare, as the interviewee might wander off in a direction not relevant to the research (Bell et al., 2019). Moreover, Bell et al. (2019) suggest using semi-structured interviews when there is more than one researcher to make sure the interview guide does not change too much based on which of the researcher conducts the interview.

The benefits of the semi-structured interview provided the researchers with a leeway to ask follow-up questions related to each answer. Therefore, the researchers could ask follow-up questions to further understand the participants' experiences and views. All interviews were scheduled to be 45 minutes, but they were booked within an hour timeslot. That gave the researchers and interviewees freedom to decide how much time to allow to specific topics, and the interview was not rushed.

It was deemed essential to keep the interview atmosphere relaxed, as the researchers wanted in-depth knowledge of the participants' experience and views on team-level success and the factors contributing to it. Therefore, at the beginning of each interview, the researchers stated that there were no right or wrong answers to the questions. Furthermore, the researchers emphasized that the discussion should flow like a natural conversation. This was done to set a relaxing environment and make the participants feel safe to share their feelings on sensitive topics like team morale, performance, conflict, or communication.

A pilot interview was conducted to prepare the researchers for interviews and get a feeling of how to ask questions. The company supervisor was deemed a good fit for a pilot interview, as the researchers had gotten to know her and felt comfortable around her. After the pilot interview, the researchers received feedback on what could be improved. Furthermore, the researchers watched the interview recording together to give each other feedback on what could be improved. The pilot interview was deemed successful, and the questions fit to answer the research questions. Consequently, the researchers decided to include the data from the pilot interview in the data collection.

Both researchers were present during all interviews to ensure the quality of the interview and the data collected in them however, with divided roles. One would lead the interview and ask questions, while the other took notes and suggested interesting follow-up questions in a shared document. This method eased the pressure on the researcher conducting the interview as they knew that the one taking notes could provide follow-up questions if needed. Furthermore, it gave the researchers confidence knowing that the other would back them up if needed during the interview.

Interview guide

The interview guide included questions designed to generate answers to the research questions of this study. A few questions were deemed essential to ask in all interviews, and those questions related to how the participants define success, what they believe are the success factors for their team, and how they could be measured. To create a particular context for the participants, the researchers tried to ask the questions in that order. However, additional

questions that were not part of the interview guide were added in some interviews if the participants' answers had relevance to the research, and a question was needed to further enhance the researchers' understanding. Questions were generated around whether the participants could tell a story about a particular triumph or describe when they felt their team was successful and what contributed. This was done to incentivize the participants to share their feelings and experiences related to the research questions.

The pilot interview ensured that the interview guide was effective and generated answers relevant to the research questions. Furthermore, it gave an estimate for the number of questions that could be asked during the interview timeframe. After the pilot interview, the interview guide was slightly revised, primarily by reordering questions and ranking them by importance. The interview guide aimed to help the researchers focus on questions valuable for the research questions, generating higher quality data, which would lead to a more effective analysis.

The final question in all interviews was if the interviewee felt there was something else vital to their team's success that had not been asked, or if there was anything else they wanted to highlight. This question was highly effective as it often generated answers and perspectives the researchers had not thought of. This is in line with what Bell et al. (2019), as they suggest the final question to be "what do you think I should have asked that I didn't?".

Recording and transcription

All interviews in this research were recorded and transcribed. Bell et al. (2019) state that having a detailed recording of interviews is essential in qualitative research as it is required for thoroughly analyzing the gathered data. Further, all interviewees agreed to be recorded, which was beneficial for the analysis.

The transcriptions were done by the researchers themselves, using a software called oTranscribe. The software did not do any automatic transcription, but it eased the transcribing by providing the tools to play the recording and write the transcription in the same software. Though the transcriptions were time-consuming, they were deemed essential for the analysis. Bell et al. (2019) argue that it is beneficial for the researchers to return to the recordings as it could provide another interpretation and open a more detailed analysis of what was said.

To limit bias and the researchers' influence, the researchers transcribed interviews that the other researcher had taken the lead in. That opened an opportunity for the researchers to analyze each other and provide feedback for future interviews. The transcriptions were done continuously over the same period as the interviews were conducted. Doing so created a balanced workload, and it was favorable for the researchers to prevent a high mental workload of having to transcribe many hours of interviews at the end of the interview period.

3.4.2 Observations

Interviews and surveys have been found faulty as they can generate abnormal situations for the respondent (Bell et al., 2019). One of the critiques is how participants' answers might not represent their actual behavior. Furthermore, there is a social desirability effect where the interviewee answers what they think the researchers want to hear (Bell et al., 2019). Thus, structured observations were performed after the first round of interviews to respond to this critique and act as supporting data to the data gathered from interviews. Furthermore, the observations were deemed vital for the researchers to evaluate the teams' behavior to provide a baseline for recommendations for the company.

The researchers set out to observe teams in their natural environment during a company-wide program increment (PI) planning week. This week is dedicated to determining and planning the work to be conducted during the next PI. PI planning is a common element of the SAFe and the PI planning week at Zenseact takes place every twelfth week. The meetings in the PI planning week were conducted in a hybrid environment, with some employees present at the office premises and others joining online. The researchers were located at the office premises but joined the meetings online to ensure they could observe all participants. The PI planning week was chosen as the teams worked together during that week to create the sprint planning for the next increment, allowing the researchers to observe the teams' collaboration and interactions. The objective of the observations was to observe and record behavior related to the success factors mentioned in the first round of interviews.

The observation schedule was based on 15-20 minutes of observation of team meetings. Three different types of meetings were observed: meetings with the whole ART, group meetings of teams with joint responsibility, and development team meetings. Table 3.2 outlines how many meetings were observed, how many attended each meeting, and how long the observations lasted. It should be noted that the observation time is the time the researchers observed the respective meetings, not the full length of the meetings and a total of ten meetings were observed. During the observations, both researchers observed and took notes. The focus of the notetaking was on conversational turn-taking, where the employees were located and whether they joined digitally with their cameras on/off, the nature of the conversations and interesting elements of the communication, like disagreements or criticism of other teams or management. After each observation session, the researchers discussed their notes and related insights to limit personal bias.

Table 3.2: Information about the observed meetings.

Whole ART	**People attending**	**Observation time [minutes]**
Joint start meeting	79	20
Joint planning adjustment meeting	60	10
Groups within ART		
Sync meeting 1	13	10
Sync meeting 2	19	20
Development teams		
Development team 1	7	10
Development team 2	8	10
Development team 3	7	10
Development team 4	5	10
Development team 5	6	10
Development team 6	5	10
Total minutes observed:		120

3.4.3 Survey

Supplementary to the interviews, a survey was conducted to test the findings generated from the interviews. A self-completion questionnaire was chosen as survey design as it is quick, easily scalable to many participants, and convenient for the participants (Bell et al., 2019).

Sampling

As all teams at Zenseact are designed to be agile and self-managing, the population chosen for the survey was therefore all employees, which constitutes 521 individuals. However, it was stated in the survey that the researchers were interested in employees' personal perspectives. Thus, they were asked to answer the questions considering the team(s) they were a part of or managing. This was done to ensure that the results would apply to the team-level perspective.

Distribution

The survey was distributed via a software called &Frankly. Zenseact uses &Frankly for short employee surveys, and therefore using this software would make the circumstances as natural as possible. Another benefit of using &Frankly was that the Engineering Managers quickly promoted it and ensured that the researchers could reach the whole company. In addition, as the employees are familiar with &Frankly, using it created a sense of trust for the respondents as it was a software they were acquainted to. Thus, the researchers expected a much higher response rate by using &Frankly than another software, which the employees were unfamiliar with. The survey received a response rate of 40%, which was deemed sufficient to draw conclusions from the data collected. Table 3.3 displays an overview of how many received the survey and the response rate.

Table 3.3: Overview of who the survey was sent out to and the response rate.

	Sent to	Response rate	Number of answers
ART Dynamic World Driving	92	38%	35
ART Perception & Compute Platform	63	44%	28
ART Static World Driving	98	37%	36
ART Software Product Enablers	106	47%	50
ART Systems & Features	70	39%	27
Product	28	11%	3
People team	11	60%	7
Data, Security & Digital	22	33%	7
Finance	14	65%	9
Customer	8	26%	2
ZLT (Zenseact leadership team)	9	38%	3
Total	**521**	**40%**	**208**

However, it should be noted that there were limitations with using &Frankly, as it is designed for short company surveys but not scientific surveys. The main limitations were: First, questions about success factors could not be randomly distributed. According to Martin (2005), the order in which the questions are asked changes the context of the question. As some of the success factors are ambiguous, the order they are asked in could affect how the respondents

value them. The researchers used a random distribution of the success factors and asked them in alphabetical order to respond to this limitation. The second limitation was not being able to explain the questions in the text before they were asked; &Frankly is designed as flashcards containing the questions, and there are no free text cards. The researchers responded to this limitation by inserting a card with a simple yes/no answer and used that card to explain the coming questions, see Figure 3.3. The third limitation was that the researchers did not get direct access to the data set as &Frankly is built to provide practical and pre-analyzed results. Therefore, the researchers could not look at individual data sets and they were only able to aggregate the results on an ART-level, however it was possible to aggregate on a team-level if there were more than four respondents from a team.

Figure 3.3: A screenshot from &Frankly, showing the simple yes/no question.

Despite these limitations, the researchers concluded that the benefits of using &Frankly were greater than the limitations. Accordingly, it was deemed appropriate for conducting the survey.

To ensure a reasonable response rate, the researchers promoted the survey to all employees using Slack. Furthermore, the researchers had presented the survey and its potential benefits to the Engineering Managers' community, and they assisted in promoting the survey and encouraged their employees to answer.

Survey design

The survey began with a question designed to understand how employees define success. Next, participants were asked to rate between one to five to which extent they agree with success definitions identified in the interviews, followed by an open-ended question on if they had other ideas on how to define success. Following were 13 questions where respondents were asked to rate how important they considered the different success factors established from interviews, and their satisfaction with them. Satisfaction was included in order to create an additional dimension for analysis and to provide Zenseact with more thorough results. Finally, two open questions were asked where participants could state if there was anything else vital to their team(s) success that had not been asked. The whole survey can be seen in Appendix A.

Survey process

During the design phase of the survey, it was reviewed and commented on by the academic- and company supervisors. The survey was then altered based on their feedback.

A pilot survey was conducted to ensure participants' clarity and remove any uncertainties. The pilot survey was also used to determine the viability of using &Frankly and confirm that the form of the results was analyzable to the extent the researchers wanted. The sample size was eight people and consisted of the people who previously had been interviewed in the study. The feedback from the pilot group was mainly connected to the limitations of using &Frankly, which the researchers were aware of. Feedback was given about the wording of some questions, and the researchers made minor alterations in line with the feedback.

The survey was conducted and sent out to all respondents simultaneously via &Frankly. Furthermore, &Frankly sent out an email to all respondents with information about the survey and a link to the questionnaire. The survey was open for five days, and both the researchers and the company supervisor promoted it during that period in various communication channels within Zenseact.

3.4.4 Other data

As this research likewise aimed to provide Zenseact with recommendations based on the results, the researchers needed to establish a baseline for the team-level success factors within the company. Thus, it was esteemed necessary to analyze company data and office premises to understand both how agile methodologies are practiced, and how teams are supported. By analyzing company data, the researchers ensured that their recommendations would fit and be aligned with the company.

Other data that was analyzed were values and guidelines, internal processes, onboarding material, and physical office spaces.

3.5 Data analysis methods

The data gathered was continuously analyzed throughout the research period. Two analysis methods were used, based on the nature of the data. First, thematic analysis was used to analyze the data from the interviews, observations and company data. According to Bell et al. (2019), a thematic analysis is used to establish a pattern within data by looking at repetitions and grouping them together. Last, statistical analysis in Excel was used to analyze the data from the survey, as the data underpinning the survey had already been thematized. In addition to gathered data, the researchers used theory from the field of research to provide background and compare the data gathered in this research to what had already been established in the research field. The comparison was done by synthesizing the success factors from previous theory into a conceptual framework and comparing it to the success factors identified from data in this research. The analysis structure is presented further in the following sections.

3.5.1 Thematic analysis of data from interviews, observations, and other data

For the interview data, all interview transcripts were coded in Microsoft Word and thematized in miro, a digital whiteboard software, to analyze them. The coding process was conducted by going through all interview transcripts and highlighting interesting quotes relating to the team-level success or the factors contributing to it. The researchers coded the first two interviews together to ensure that both researchers had the same focus while coding and limiting researchers' bias. The remaining six interviews were split between the researchers so that each

researcher coded the interviews that the other researcher had transcribed. By doing so, the researchers ensured that they were both familiar with the data.

Next, all coded quotes were copied onto a whiteboard in miro, a digital whiteboard software, using different colored post-it notes for each interviewee. The miro board can be observed in Appendix B. By assigning each interviewee a specific color, the researchers could track the coded statement to each interviewee. In addition, using different colors ensured that responses from all interviewees were a part of the analysis. When all codes had been copied, the researchers grouped statements with similar meanings. By doing so, themes started to appear, and success factors were defined from the coded interview data. The process of clustering the coded parts into themes was iterated several times before determining the final presentation of the themes. Therefore, the analysis process became time-consuming, but Bell et al. (2019) argue that by iterating the clusters, the researchers create a more profound understanding of the data, so it was deemed beneficial despite the time consumption.

As a conceptual framework formed from previous theory was used to give background and context to the analysis, the success factors identified were grouped into the framework's categories. That was done by applying the same conditions applied to success factors from theory when creating the framework to the success factors identified.

3.5.2 Statistical analysis of the survey results and a gap analysis

The data from the self-completion questionnaire was statistically analyzed regarding the success factors identified, using Excel. According to Meyer and Avery (2009), Excel has often been associated solely to quantitative data analysis due its capabilities to handle big numerical data sets, and the various features it withholds to analyze and display quantitative data. However, Mayer and Avery (2009) argue for the use of Excel in a qualitative research as well and that its structure and features can also prove valuable for qualitative analysis.

Qualitative answers to open questions regarding success factors were coded in Excel using the success factors identified in the data from the interviews as a code. However, answers which did not relate to a defined success factor were synthesized and added to the answer of RQ1. For the qualitative data, the average data for the importance of each success factor was used to rank them in order of perceived importance and create a basis for answering RQ3.

A cross-matrix analysis was done, mapping the satisfaction of the success factors against how important they were perceived to build a foundation for the recommendations to Zenseact and provide support in answering RQ3. From this analysis, the researchers were able to conduct a gap analysis by identifying the desired future state when the most important success factors would be perceived as highly satisfactory within the teams. The current state from the analysis could then be compared to the desired future state, and recommendations built up around how to bridge the gap between the current and desired future state.

3.6 Quality criteria

There are specific quality criteria all researchers need to consider when designing their research projects. As this research is mainly qualitative and has the epistemological and ontological assumptions of a qualitative research, the researchers pledge to the quality criteria used for qualitative research. These are described by Mason (2018) as validity, reliability, and generalizability. Replication is another quality criterion, more commonly used for quantitative research (Mason, 2018). In this research, the replication criterion was labeled as external reliability and part of the reliability chapter, as is often done in qualitative research (Bell et al., 2019). Furthermore, in qualitative research, it has been argued that the mentioned criteria need

to be altered as they imply the notation of measurement (Bell et al., 2019). Hence, the researchers selected altered quality criteria for the validity and generalizability of this research. The altered quality criteria are described in each of the following subsections.

3.6.1 Validity

The validity of a study refers to if the researchers' conclusions are interrelated to what they observed, identified, or measured (Mason, 2018). Bell et al. (2019) further propose trustworthiness and authenticity to evaluate the validity of a qualitative study, the researchers therefore address these aspects as well.

Ecological validity

Ecological validity addresses whether the results of the study are valid in the naturally occurring everyday life of people in the real world (Bell et al., 2019). To ensure ecological validity, the researchers conducted the study at the case company premise and all interviews and observations were performed in the participants' natural working environment. However, it should be acknowledged that the thesis was done right after restrictions due to COVID-19 had been lifted and many employees were still working partially from home. Thus, the interviews were conducted digitally. However, the researchers argue that a digital environment and digital meetings have become the reality for many people after the COVID-19 pandemic. To increase the ecological validity, the researchers used the same software and equipment as the participants and were located on the case company premises when conducting digital interviews. Furthermore, the researchers used the same software for the self-completion questionnaire as the case company uses for their internal surveys, making the digital environment identical to what the participants are used to in their everyday life.

Trustworthiness

The criteria for trustworthiness related to validity are credibility and transferability. Bell et al. (2019) include dependability and confirmability as part of the trustworthiness criteria, but as they also relate to reliability, they are described in that chapter.

The credibility of the research concerns whether the study follows the guidelines of the chosen methodology and the reality observed is confirmed to be the reality of the participants (Bell et al., 2019). Two measures were taken to ensure credibility. Firstly, the researchers chose a research methodology that was deemed to fit the aim of the research. A mixed method, with a high qualitative focus, approach to the research was argued to be appropriate for this project, as the research character indicates the project's interest in personal opinions and experiences. Secondly, respondent validation was used in the data collection to ensure that the data gathered represented the participants reality. Respondent validation is when researchers provide the participants information about the results to get the participants' confirmation that they are based on their reality (Bell et al., 2019). All interviews were recorded and transcribed. If there was any doubt about what the interviewee said, it was sent to the interviewee for confirmation.

The transferability criteria assess if the study results are transferable to a different context from the research environment (Bell et al., 2019). As the research is a case study on one solitary case company, it generates results based on in-depth knowledge of this case company. Bell et al. (2019) suggest that qualitative researchers can ensure transferability by thoroughly documenting and describing the context and culture of the case company. By doing so, other researchers can evaluate how transferable the results are to their context. Consequently, the

researchers have documented and described the context and culture of the case company in this research.

Authenticity

Authenticity in qualitative research holds the researchers accountable for equally representing various viewpoints in a social context and ensuring that the results provide the participants with an improved understanding of their situation. Furthermore, the researchers should empower the participants to participate in actions to change their condition (Bell et al., 2019). The researchers had these criteria in mind throughout the research to ensure authenticity. Furthermore, suggestions for improvements were provided to the case company, aimed at helping the participants improve their working environment.

3.6.2 Reliability

The reliability criteria in a qualitative study assess how dependable the results are. It considers if the result can be achieved if the research was conducted again, or if they are highly dependent on the context of the study (Bell et al., 2019). According to Bell et al. (2019), confirmability and dependability should be assessed as a part of the reliability criteria to increase the trustworthiness of a qualitative study. Thus, the researchers did that, which is described in the coming sections. Furthermore, external reliability is evaluated and used as a replication quality criterion at the end of this section.

Dependability

To increase the study's dependability, the researchers received continuous evaluations from the academic supervisors from Chalmers and from the supervisor at the case company. In addition, before the study began, a detailed plan for the research strategy, design, and data collection was sent to the examiner at Chalmers and the case company for feedback and approval, which was essential to assess the research choices made by the researchers. Lastly, in the final stages of the study, the report was thoroughly reviewed and commented on by supervisors and two other master's students from the Intellectual Capital Management track at the Chalmers School of Entrepreneurship.

Confirmability

The criterion of confirmability addresses the researchers' objectivity and that they act in good faith. Even though it is nearly impossible for researchers to be completely objective in social research, the researchers were aware of the importance of objectivity and acted in good faith. Furthermore, they have made sure not to let theoretical preferences or personal values impact the interpretations of collected data and observations by being critical of the collected data and iteratively discuss collected data with each other, trying to detect any bias.

External reliability

External reliability or replicability evaluates if the research can be replicated using the same methodology (Bell et al., 2019). As this case study was executed in a social context, it is impossible to repeat the same circumstances. However, the researchers provide a detailed description of the method in chapter 3 and the social role the researchers took while conducting the research. Therefore, other researchers can mimic the same social role and the method to replicate the study.

3.6.3 Generalizability

One of the critiques of case studies as a research method is that they rarely are generalizable beyond the context of the case company (Yin, 1994). Therefore, it is valuable to reflect on whether the results of this study are applicable to other cases.

Multiple actions were taken to increase the generalizability of the research. Firstly, even though interviewees were selected through snowball sampling within the company supervisor's department, interviews were conducted with people from different teams. In addition, a survey was done via a self-completion questionnaire sent to all employees to ensure that the data gathered from interviews was generalizable over the whole case company. Secondly, multiple roles within an agile team were interviewed to make sure all perspectives were considered. Thirdly, observations were conducted on multiple teams, both teams of the individuals interviewed and other teams. Therefore, the research has a holistic perspective on agile teams in software development.

Consequently, it can be argued that the results can be generalized to other agile teams in software development. However, it should be noted that the case company has an atypical position, as they have not yet delivered their product to market. Thus, they might not have the same stakeholder requirement of profitability as more mature firms, which may affect the results, how the employees define success and the factors contributing to it.

3.7 Ethical aspects

Bell et al. (2019) state that ethical principles are vital in every research. Researchers should always think about how they treat the research participants and if there are any unethical activities they should not participate in. In this research, the researchers take a universalist stance on ethics: the view that ethical principles are never to be violated (Bell et al., 2019). Therefore, every action was taken with ethical consideration and to not provide harm to any participant.

A few ethical principles were used to guide this research. Firstly, all participants were informed about the study and its aim. Secondly, all participants were made aware that they could withdraw from the research without questioning at any point and participation was voluntary. Thirdly, anonymity was provided to every participant as the research is on a team level. Thus, the study will only look at the team-level perspective and not point out specific individuals. Finally, while analyzing the survey data, the survey software did not display any team-specific results unless there were enough participants to ensure anonymity.

As the study aims at providing no harm, all participants and data remain confidential. All participants, both in interviews and observations, gave their consent beforehand. Furthermore, participants gave permission to record all interviews. To ensure that all participants were treated fairly and respectfully, they were allowed to ask questions or choose not to respond to questions in all interviews. After the interviews, they also had access to the researchers if they had any doubts or questions.

As the recordings of interviews are video recordings and therefore not anonymous, the recordings have been deleted after this finalized report. Although transcriptions of interviews were not deleted as they could be vital to the external reliability of this research, they are however anonymous and are not traceable back to the participant's identity.

4 Empirical findings

The following chapter presents results from empirical data gathered during the research. The results are presented in chronological order, starting with the inspection of company documents and facilities, then interviews, followed by observations, and finally results from the survey. The aim is to provide the reader with the data grounding the analysis and recommendations.

4.1 Inspection of company data and offices

The office environment, together with company data and documents relevant for teamwork were continuously gathered throughout the research process. The following sections present the data gathered and are divided into six subcategories, aiming to provide the reader with a fundamental understanding of Zenseact and its organizational culture, values, and operational context.

4.1.1 Teams at Zenseact

In line with the Agile manifesto, Zenseact's guidelines for teamwork and how to engage teams acknowledges that high-performing teams are the key to success. Furthermore, it is Zenseact's stated belief that high-performing teams develop superior products and are value-adding to the customer. Zenseact aims to build teams that are self-managing and empowered to increase involvement, reach faster and better decisions, have high efficiency, balanced utilization of skills between team members, and develop mutual responsibility.

In addition to being self-managing and empowered, the teams at Zenseact also aim to be driven by purpose. Zenseact uses a process called the 4Ps to guide each team's work. The process consists of four categories: Purpose, Principles, Procedure, and Performance Indicators. Table 4.1 displays what each category stands for in more detail. In the 4P process, each team is supposed to establish their 4Ps in a workshop where they define a purpose that is aligned with the organization's and create a working agreement based on the 4Ps. The 4P process is not static and the teams are supposed to continuously review and update them. Current 4Ps are visible to the whole organization in the Zeniverse which is the dynamic world designed to display the organizational structure. However, not all teams had their 4Ps established at the time of this research and some of the teams who had established them were not treating them as a dynamic process.

Table 4.1: Zenseact's 4P Process.

4P Process			
Purpose	**Principles**	**Procedure**	**Performance Indicators**
The mission of the team and why it exists	How to act and behave when working together; reflective of Zenseact's values	The way of working together in the team	Measures to assure the team delivers on its purpose

4.1.2 Company values and culture

When looking at company data, it is evident that Zenseact is people-driven, and their outspoken everyday motto is "People at heart". The motto indicates that it is the company's intention that

people are put at the center of everything done. Zenseact acknowledges that successful companies are dependent on their employees and how they contribute to the benefit of the whole. Therefore, their values are centered around developing the employee competence needed to drive change and innovation.

Zenseact has four values which all should be embodied with “People at heart”. The values are *Grow trust, Seek and share knowledge, Push boundaries,* and *Take ownership.* The values are formulated to guide action and ensure that action is taken with “people at heart”.

In line with the previously mentioned values, the culture at Zenseact aims to foster autonomy, trust, and value-based leadership aligned with the Agile manifesto. The culture revolves around inspired teams on a mission, striving towards the same goal: “Towards zero faster”, e.g., moving towards zero traffic collisions faster. Zenseact aim is therefore to create autonomous driving technology to make safe and intelligent mobility real, and by doing so going “Towards zero faster”.

4.1.3 Office environment

The office environment mirrors the culture and values of Zenseact. On the walls are words from the Agile manifesto indicating how the company sets out to be. Figure 4.1 shows a sample of photos taken at Zenseact’s office space in Lindholmen, Gothenburg. The offices have an open layout with team spaces and free seating, the walls are covered with whiteboards, and meeting rooms have glass walls, contributing to the feeling of transparency. Furthermore, there is evidence of motivating and engaging initiatives like thankful boards, praise boards and encouraging words aimed at motivated and empowered teams.

Figure 4.1: A sample of pictures of Zenseact’s offices.

4.1.4 Communication pathways

Within Zenseact, various communication channels are used. The channels the researchers noted were e-mail, Zenseact’s intranet which runs on a Microsoft Office SharePoint platform, Confluence which is tightly connected to the intranet, phone calls, Microsoft Teams, face to face communication in the office, and Slack. As Slack is the primary communication channel used, the following section digs deeper into how it is used.

Slack, a business platform for internal communication, is used immensely within Zenseact with around 13,000 messages being sent through it on average daily. Slack has features for teams and other groups to create chat rooms, called channels, which can be either private or open for all employees to join. The channels are organized by topic or private groups. Zenseact has various channels, some of which are non-work related. Moreover, Slack also offers direct messaging between employees. An example of channels and their purpose is seen in Table 4.2.

Table 4.2: An example of Slack channels used within Zenseact.

Channel	**Purpose**
#announcements	Used for announcements and reminders that concern all employees.
#appreciation-wall	Used to thank colleagues or show appreciation for something they deserve to be praised for.
#random	Used for random discussions, employees create posts about anything, work or non-work related.
#whine	Used to complain about work or non-work related things.
#satisfaction	Used to show appreciation to random things, work or non-work related.
#help-(team name)	Used to discuss topics related to the team and requests from employees outside the team for the team's input.
#help-it	Used to discuss and ask for help around the IT environment at Zenseact.

The channels at Zenseact are frequently used and have multiple posts each workday. Employees can further support or discuss posts, either by commenting or using various emojis to show their opinion on the post. In April 2022, the channel which most members posted in was the help-it channel. Interestingly, the #random channel was the third most popular channel to post in and #whine the seventh. Both channels are used for work and non-work related topics and the whine channel is used to complain, indicating that employees feel secure and comfortable with using Slack for informal communication as well as formal. Table 4.3 shows the ten most used channels in April 2022, ranked by the number of members who posted in each channel.

Table 4.3:The ten most used channels in April 2022.

No.	**Name**	**Total membership**	**Messages posted**	**Members who posted**	**Members who viewed**
1	**help-it**	719	1,011	180	598
2	**help-(team_name)**	490	2,313	169	386
3	**random**	876	426	136	552
4	**help-(team_name)**	398	846	128	310
5	**help-(team_name)**	504	1,106	121	403
6	**help-(team_name)**	376	1,144	92	216
7	**whine**	457	413	89	361
8	**help-(team_name)**	266	681	88	226
9	**help-(team_name)**	367	660	86	300
10	**help-(team_name)**	375	356	69	259

4.2 Interviews

The following section presents the empirical data gathered from interviews with Zenseact's employees. It is divided into how interviewees define success, their ideas on measuring success, and what they believe are the success factors for their teams. For readability and clarification purposes, the interview data has been synthesized and will be presented with the aim of highlighting the most relevant insights from the interviews. The results are presented using the term "interviewee" and their work title. This presentation method is chosen to ensure participants' anonymity while still providing some context to their position within the organization.

As the work title is used to provide context to the interviewee position it is important to remind about their position in the development teams. Engineering Managers and Product Owners hold leadership roles for multiple teams, while developers form various development teams.

4.2.1 Definitions of team-level success

The following comment from an Engineering Manager explains how a large majority of the interviewees define success as a two-folded term:

I think technical parts are important but maybe that is just the half of it, the other half is uhh how people are feeling and performing, and how they are able to do their job, and so on.

One developer likewise emphasized the importance of employee satisfaction and stated that having fun was more important than the outcome:

Because even if we deliver, if we had a terrible time, I wouldn't say that was a success.

On the contrary, one Engineering Manager defined success strictly based on the outcome of the teamwork and emphasized the scope of the team as success:

I think it is very much about efficiency, doing the right things. Uhh, putting the energy and the focus on the right things, see to that we have output. Not doing trivia or stuff that are not value adding. Uhh I am quite strict, that it should be... task oriented.

One Product Owner made a distinction between outcome-focus and employee satisfaction, emphasizing delivering on time and work satisfaction:

Consider from the point of view of the product. I could say that you're... we're delivering on time for the customer, but I think success is a bit more about that… also about the success in the longer term, which also means building up good teams, good happy teams with competences that we're developing.

Therefore, short-term success was seen as outcome-focused and meant delivering on time. In contrast, long-term success was building up competent and satisfied teams who contribute to the joint learning of the team.

From the interviews and theory, four definitions of success were synthesized and used to measure how Zenseact's employees define success. These definitions were scope, time, learning and work satisfaction. Scope refers to reaching all requirements and objectives, and time concerns e.g., finishing tasks in time. Consequently, these two definitions are considered to treat the outcome-focused perspective of success. Likewise, learning and work satisfaction are seen as process- or behavior-focused definitions of success.

4.2.2 Measurements of success

As RQ2 aimed to answer what methods could be used to measure the team-level success factors the interviewees were asked about this. All interviewees agreed that the outcome part of team-level success was more straightforward to measure than the employee satisfaction element.

For the outcome component, the team's work could be defined, and key performance indicators used to determine if the team was successful or not. However, it was also noted that key performance indicators are established. One developer stated that:

You kind of need to define the tasks so they are finishable, right?

Indicating that tasks and outcome components would be hard to measure if the measurements were not defined.

However, most interviewees were uncertain on how team-level success could be measured for the employee satisfaction element, as many of the success factors were regarded intangible. In that context, an Engineering Manager described an experience from previous workplace highlighting that the intangible factors were ill-measurable:

We have had at previous places where I have worked there was this ahh... like check in "how are you feeling today?", could do this rating and so on. I mean there are things like that but it's ahh... I am not sure if it didn't really give any value, it was difficult to measure.

Other interviewees mentioned self-evaluation surveys but also acknowledge a downside with that method: it is hard to compare how employees rate themselves as self-evaluation can be biased due to personal beliefs or experiences. However, most interviewees agreed that using self-evaluation surveys to measure employee satisfaction was viable if the results were analyzed looking for trends, i.e., the direction of the change - how the employee wellness had changed since the last survey - rather than seen as a static performance indicator. One Product Owner mentioned the importance of measuring continuously to see the results of change on employee satisfaction and stated:

But at least we can probably see the direction things are going in, if they're going up or down and at the end of the day I don't think that the number really matters, but what matters is if we change something or take it eh... a decision, through something, if this start making people say that they are less happy than they were before doesn't really matter which happiness level they were at - we know that it was a wrong decision.

Some interviewees mentioned observations and one-on-one conversations with managers as means to measure employee satisfaction. However, they also admitted a downside of these methods as they are difficult to quantify.

4.2.3 Success factors

Multiple views on the factors behind team-level success were revealed when the interviewees were asked to state what made their teams successful. This section presents these views, and thus provides the answer to RQ1. For clarification and to make the success factors mentioned by interviewees analyzable, the researchers synthesized them into 13 categories based on their interpretation. All but one success factor was mentioned by multiple interviewees, and Table 4.4 shows how many interviewees mentioned each success factor. The following 13 sections

describe each of these success factors, in the order of most mentioned to least mentioned, and what the interviewees said about them.

Table 4.4: The 13 success factors identified and how many interviewees stated them.

Success factor	**Number of interviewees stating it**
Trust	8
Organizational procedures	8
Communication	7
Respect, understanding and acceptance (RUA)	7
Having a common goal	7
Task satisfaction	6
Team morale	6
Team autonomy	6
Balanced contribution	6
Defined responsibilities	6
Diversity	6
Purpose	5
Physical environment	1

Trust

All interviewees mentioned trust as a vital success factor for their teams. For example, one Engineering Manager framed it as:

Showing trust and feeling that you are trusted also enables you to say what you think about things and to be open with driving changes or coming with suggestions and so on.

Trust was thus seen as necessary for a team to utilize the capabilities of each team member. The interviewees mentioned that the team size and how long the team had worked together were essential for creating trust. In addition, physical interactions were also stated as important to create trust. As these factors were mentioned essential to build trust in a team, one could argue that they are also success factors. However, in this research they are treated as a part of the higher-level success factor trust.

Organizational procedures

All interviewees mentioned clear organizational procedures and a culture where employees adhere to and respect the organizational procedures as vital factors for their team's success. The interviewees agreed that clear organizational procedures would support palpable communication pathways, which would lead to increased efficiency of the teams as it would limit external disturbance. One developer described it as such:

I really, really like when you have a good process, it is super-efficient, and you don't need to do anything that is unnecessary.

Organizational procedures were also thought of as crucial for cross-team collaboration. A few interviewees mentioned that their team's assignments are often dependent on another team's

work. Therefore, it is essential to know whom to contact and how they can see who is responsible for the work they need. However, it was evident that current organizational procedures were not working optimally, and work requests were coming to the teams in ways they should not. One developer explained the possible reason for it to be:

Because they realize that okay if we do this the official way it will take this amount of time, but if we just reach out to someone it will happen in a shorter period of time.

According to organizational procedures, teams should get their tasks and requests from their Product Owner, and it should be a part of their sprint planning. However, that was not always the case and one developer described it as such:

We don't have a clear requester. It is coming in from all directions and I would say that right now we have kind of an, not an IT problem, but we have too much technology.

Due to this uncertainty the developer experienced the team not being efficient and proceeded with:

Because right now, people are just piling on, yeah you need to do this, you need to do this, you need to do this, but they don't remove stuff. So, the efficiency goes down I would say.

It was also stated that the organizational procedures should be dynamic and adapted to fit the needs of the teams. One organizational process mentioned was the construction of the teams' 4Ps. Interviewees had a different understanding of the 4Ps, and a majority felt like the 4Ps was not a dynamic process; instead, it was a static document on the side. One developer stated:

I think if you work very good with the 4Ps they can contribute. I think it has been a bit 4P fatigue in the organization. Uhh… like ohh the 4Ps again, I think the thoughts behind, I think the dialogues, they should umm… you should have. Doing a good 4Ps is good, maybe it needs a bit reiteration.

Communication

A majority of the interviewees declared good communication as a founding team-level success factor. Good communication was cited to be both frequent and transparent. Interviewees in managerial positions stated that it was vital to be available for their teams and try to join some of the teams' meetings. In addition, good communication was suggested to mediate the achievement of other success factors, such as trust and acceptance, respect, and understanding.

Ways to communicate and how to incentivize communication were also mentioned as important. One Engineering Manager formulated it as:

It is communication, but I think that is very important to facilitate so everyone gets their arena to interact with others. Uhh and that is depending on the person, and the situation and such.

They also emphasized:

But then you don't need to speak your mind with words always, you can speak your mind in your actions, or in paper, on paper or Slack or wherever.

Multiple interviewees pointed out this view that it was possible to communicate through other media than face-to-face conversations and felt like there was a need to understand that some individuals struggle with face-to-face conversations but communicate well on paper or using other digital media. The retrospective meetings, i.e., an institutionalized reflection meeting at the end of a project, were stated by some interviewees as means to incentivize communication, but, in general, interviewees raised different opinions about these meetings. Some interviewees felt that they were treasured, whereas others felt like they were a bit awkward and provided more value to management than the teams themselves. The following comment from a developer explains this view:

Everyone felt so forced to come up with stuff to say. I feel like everyone had this feeling," I have nothing to say but I have to say something".

Despite everyone understanding the value brought by the retrospectives, the teams wanted more authority to decide on how and when they had their retrospectives. Tools like digital preparation meeting sites on the intranet were mentioned to ease communication and make the retrospectives less forced and awkward. Moreover, one Product Owner stated that it was important for everyone in the team to be responsible for communication and making sure that there was an equal contribution:

It's only a few people that speaks, but I think that's something we can get better at to like actually... if we feel that someone is not speaking or having said anything for an hour, if that's the meeting length, then actually like ask them directly, like "hey, ehm [employee name] what do you think?" I think that is something I should get better at eh.. because usually when you do ask those questions you can get like another perspective or maybe even a solution that no one have thought about so eh...

Respect, understanding and acceptance

Being able to describe their situation and knowing that they would be accepted regardless of how they felt or contributed that day was deemed critical to the team's success. One Product Owner framed it as:

We always try to have a constructive dialogue about it ehm... and also like not blaming each other if something goes wrong, but rather like understanding that we're all in this together, we solve problems together and we... we kind of communicate about problems and try to help each other.

To be able to increase understanding, one developer said the team members could be:

Better at accepting people's bad days, and maybe see it as something that you can probably help with, instead of just be annoyed with.

If all team members feel accepted and respected, they are more prone to raise their opinions and dare to initiate difficult conversations. It was also seen as crucial that even though there is respect, acceptance, and understanding, everyone did not have to agree with each other all the time. However, due to respect, acceptance, and understanding, team members could understand why a particular decision was taken, and everyone would feel that they had the chance to express their opinion.

Having a common goal

To ensure that the teams are working toward the company's objectives, having a common goal within the team connected to Zenseact's goals was mentioned as necessary. Furthermore, one developer said that having a common goal was important:

As individuals we are also self-going and we ehm … we are able to eh ... take different threads on our own in order to achieve the bigger goal.

Others expressed that working towards a common goal was important for motivation, and if they were all working towards an understandable common goal, the team performed more efficiently. However, it was stated that not only establishing a common goal was sufficient; the team must be committed to it as well.

Task satisfaction

Having well-defined and adequate tasks to solve was cited as a success factor by most interviewees. Employees generally appreciate well defined tasks, and one developer said:

…like I would say that we are productive when we have a well-defined task as well.

Furthermore, a majority of the interviewees mentioned that they were driven by problem solving and having challenging tasks to solve served as a motivation for their team. When asked a follow up question about what the best part was of their team's work, the same developer said:

The problem solving, I would say. That is something that I, like, as I am engineer in that sense, I really love solving problems

In addition, in order for the team to perform at their best, it was stated as crucial to hand the right tasks to the right people and try to avoid tedious or wasteful tasks.

Team morale

Six out of eight interviewees agreed that having fun and a positive team morale was valuable for team-level success. The following statement from a Product Owner displays why team morale was seen as significant when answering a follow up question to describe more why team morale was important:

Well, I think it's important in order for eh... to enable creativity eh... because what we're doing is not... I mean, it's not like building a bridge it's not... it's... it has never been built before this thing we're doing, so we really need to have unique ideas and testing new things

Thus, having fun and a positive atmosphere within the team were linked to the ability to be innovative and creative. One developer even answered:

The best thing… that we have fun.

On the contrary, boring tasks were perceived as lowering the performance of the team and the same developer said:

like boring requirement stuff... then I guess we're not performing our best or so to say

When asked what the best thing about its team was. In line with that one Product Owner stated that fun was important to:

to keep the team creative, so that... that they are happy, have enough freedom and time to do things

Team morale was also deemed critical for the teams to behave and interact like teams, instead of just a collection of people. Furthermore, having fun was linked to better performance, and multiple interviewees mentioned that finishing tedious or challenging tasks was more manageable with a positive team morale. Some interviewees meant that it was beneficial to celebrate when things went well and remember to celebrate the small victories to keep up the team morale.

Team autonomy

Some interviewees described how having the freedom to decide on ways of working and reinterpreting tasks was essential to their team's success. For example, one developer explained:

Uhh I am very happy about how we work now so I would say the freedom to change how we work, because the way we work now, we might want to change that in a month and then we should be able to do that.

Team autonomy was further linked to motivation, and if the teams could reinterpret tasks and make them fit the overall goal, the team would be more successful. However, it was also noted that the teams are different and have different tasks. Therefore, some interviewees felt like they should be able to decide on, e.g., which agile methodologies they use or the frequency of their retrospective meetings.

Balanced contribution

When talking about how teams dealt with challenges and how they could perform the best, one Engineering Manager stated:

Now when we have hard things to solve which we have, challenges, everyone needs to contribute.

Multiple interviewees supported this view, and it was deemed necessary that all team members contributed equally to the teamwork. However, it was also acknowledged that it is impossible for everyone in the team to contribute completely equally, as members possess different competencies, and thus inevitably gravitate towards specific tasks.

Defined responsibilities

The following two comments from developers highlight the shared perception of why defined responsibilities were essential for team-level success:

There needs to be some kind of structure, I mean if we were completely self-managing or then we would not have sprint reviews for example and then the stakeholders would not see what we do and that would have a negative effect in the long run.

Something I would like to bring up everywhere in all meetings is like uhh… clear responsibilities. I feel like it is getting worse and worse, like in a ... like ... everything should be so flexible and dynamic which might be good, but it is getting out of hand I would say.

Furthermore, having defined responsibilities was seen as decisive for the teams as it would limit the external disturbances. If all teams and roles had defined responsibilities, organizational procedures would be valued, and tasks would flow to the teams through the pre-determined, official way.

Diversity

Team constellation and having diverse personalities and people with different backgrounds were considered essential for some interviewees. One Engineering Manager said:

I feel it is very important for me with people with different background, different perspectives, and different ideas.

However, it was noted by a few that it is also vital to have the right persons on the team, that is, that the diversity also includes the right mix of personalities. The following statement from a developer supported this:

… very different personalities some people are very like eh driven and outspoken and are really a like ... how to say it ... eh raise their voice as soon as they think something is problematic or something doesn't work eh ... and then we have some people that are more like ... how to say ... calm and silent but they're super intelligent when it comes to fixing problems so you can just give them a problem and then ... they fix it.

When asked what could be done to ensure diversity, the interviewees agreed that having a strategy for inclusivity and diversity was important. Furthermore, to educate employees about how they can be more inclusive and welcome differences could be a method to foster team diversity.

Purpose

When describing how purpose was a success factor for their teams, the interviewees had a different view on purpose. Some saw purpose as seeing their work have an impact, not necessarily related to “Towards zero faster”, when other exactly mentioned as “Towards zero faster” was the motivating purpose.

One Product Owner explained the former view:

To feel also that I have an effect on the product, on the company. [...] Ever since I began at the company I kind of had this goal, that I wanted to be able to say that "my software is in that car on the street".

On the contrary, an Engineering Manger formulated it as:

I mean of course it is also important to, the product that we work with, I think that is why a lot of people are here. Okay, we work with making cars safer, and drive by themselves and to reduce accidents and fatalities in traffic and so on. I think that is something that is there, but I think that is important for many people.

Physical environment

One Engineering Manager mentioned flexibility, e.g., when, and where to work, and having an excellent office environment as a part of his teams' success. He stated that employees were more satisfied with the flexibility as it provides an opportunity to combine work and personal life. Furthermore, he stated that nice offices and good office location affect how people feel, which he argued to contribute to the teams' success.

4.3 Observations

When observing the teams in action, the focus was to gain a deeper understanding of teams' interactions and behavior at Zenseact. Furthermore, the researchers had deemed the following success factors relevant to observe as they were considered particularly visible in a meeting environment: organizational procedures, communication, having a common goal, team autonomy, and physical environment. On the other hand, the remainder of the success factors were deemed unfit to observe during the PI planning, as they were either infeasible to observe in such a short time frame or not visible in the team planning. In addition to the success factors, and in order to provide a context, the researchers also observed how Zenseact's culture and values were portrayed during the PI planning.

4.3.1 Culture and values

The PI planning days started with a meeting with the whole ART. The meeting was initiated by highlighting Zenseact's values and the everyday motto of "People at heart". It should be noted that this PI planning took part just after Russia's invasion of Ukraine and a few Zenseact employees were at that point based in Ukraine. Therefore, humanitarian aspects, e.g., that employees should take care of and look out for each other, and actions to ensure safety for the Ukrainian employees were accentuated. Furthermore, employees who had put in extra efforts to alleviate the impacts of the war received words of gratitude.

4.3.2 Organizational procedures

In the joint meeting for the whole ART, teams were reminded to update their pages on the company's intranet, to ensure other teams knew how and where to reach them. Furthermore, the importance of cross-team communication was emphasized. However, in joint planning adjustments meeting it was observed that not all teams had fulfilled updating their pages on the intranet. Furthermore, all teams were supposed to be present in these meetings and state if they had any impediments that needed to be solved but that was not the case. The researchers did not observe any consequences who did not follow these guidelines, but it should be stated that the researchers only observed the meetings and do not know if this absence was acted upon by management level in another setting.

4.3.3 Communication

While observing the teams, it was apparent that the communication was imbalanced. In most teams, there were one or two main speakers, usually the Scrum Master being one of them.

Some team members were inactive for a long time, but when asked directly about something they answered. Sometimes a discussion about a certain topic had gone on for some time without a solution, then when an inactive team member was asked directly, a sufficient solution was quickly reached.

Furthermore, it was noticeable that an inactive team member who was directly asked to contribute to the discussion, contributed more willingly to other discussions after being called upon. One team who had a good flow of communication encouraged members who had been inactive for a while to speak up by saying:

[Name of the team member] you can just speak up if you do not follow what we are talking about.

In larger meetings, it was predominantly employees in leadership roles who drove the communication. General questions like "Is there anything else we need to discuss?" were typically not answered until an employee in a leadership role spoke up. In one of the sync meetings one member of a development team raised an issue his team was facing relating to dependencies to other teams work and how they could be tracked. However, instead of embracing the question and discussing it in the joint meeting, the leaders controlling the meeting answered that teams should communicate and discuss with each other to track interdependencies. The development team member who asked the question was not satisfied with that answer. Still, instead of discussing what could be done to improve inter-team discussions, the leader asked the developer to stay after the meeting to discuss it further.

Further, it was noted that when the teams later went into meetings with only their teams, they shared opinions that could have been relevant to mention in the larger meeting. When returning to a development team meeting after a joint meeting one developer said with frustration:

We were told to use the template, did it, and then received feedback that was "you shouldn't use the template"

Other team members agreed with what could be labeled as foul language, describing how management needs to create a clear process and "administrative stuff" being a blocker for the teams. Furthermore, management was diminished for bringing in new tickets, i.e., new assignments, after the first day of planning was finished. These discussions were quite equal between the development team members in terms of turn-taking, and they used words freely to diminish management, which could be argued to indicate a level of trust or comfort within the development team.

On two instances, disagreements within teams were witnessed regarding how much time should be assigned to tasks for the following sprint. In one team a demographic vote was used to decide, however in the other team the disagreement was not resulted. Rather, the ones who did not agree decided to move on to the next task, without finishing planning the task that brought the disagreement.

4.3.4 Having a common goal

The ART joint start meeting agenda was to introduce the plan for the coming increment. It was highlighted that the product Zenseact is creating is complex and some changes would always be needed in a dynamic environment. The employees were reminded to keep the overall long-

term goal in mind: producing a fully autonomous car. By focusing on the overall objective, the employees might become better at dealing with changes and the frustration they could cause.

4.3.5 Team autonomy

During the PI planning, the Product Owners jumped around meetings to support their teams. It was noticeable that when the Product Owner joined the meeting, the frequency of communication increased and people who had been inactive joined the conversations. The reason for people joining was often that the Product Owner called them out and asked directly for their input.

In some teams, the planning was majorly done by the Scrum Master, and if they required input from their teammates, they would ask for feedback. When the Scrum Masters asked for feedback without naming a specific person, they seldom received any response. Furthermore, some teams were reliant on their Product Owner and did not exhibit a high level of autonomy. This was evident when one team, without the presence of their Product Owner, were discussing how much time to devote to certain tasks and there was confusion in the team how do decide on it. When the Product Owner arrived in the meeting, a developer asked:

"[Name of the Product owner], how much time should we estimate on each task?

The Product Owner replied:

I am not the one who should know that, instead of you asking me you should be telling me that as you have the knowledge.

This implied that the developers were the ones responsible for the tasks and should therefore tell the Product Owner how much time they were to spend on a specific task. However, when the Product Owner left the room, the old dynamic was back, and the developers went back to their planning. When the developers proceeded to estimate the time to devote to each task, they guessed the amount of time each task would take. No discussions around how the team arrived at that guess were observed, leading to the researcher feeling that they were being guessed without taking much responsibility for it. Supporting that feeling was when the Scrum Master, who did most of the guessing, asked the team

What is this [name of the task], maybe someone can update this, will this be done?

No answer was provided to the question by any of the developers and after a while without a response the Scrum Master guessed a time to devote to the task.

4.3.6 Physical environment

The PI planning was conducted in a hybrid environment, with some employees located at the office, and some at home. The researchers were located at the office premises but joined all meetings online. Usually, the main speaker and a few other team members had their camera on. However, in larger meetings over 90% of participants had their cameras turned off. During team meetings, a higher proportion of the employees had their cameras turned on but still there were some teams with a high ratio of employees attending off camera.

Table 4.5 presents information about how many attended each observed meeting, if employees attended on or off camera, and the ratio of employees attending off camera.

Table 4.5: The observed meetings and how many employees attended them.

Whole ART	**Attending**	**Camera on**	**Camera off**	**% Attending off camera**
Joint start meeting	79	3	76	96%
Joint planning adjustment meeting	60	5	55	92%
Groups within ART				
Sync meeting 1	13	2	11	85%
Sync meeting 2	19	4	15	79%
Development teams				
Development team 1	7	3	4	57%
Development team 2	8	0	8	100%
Development team 3	7	0	7	100%
Development team 4	5	4	1	20%
Development team 5	6	5	1	17%
Development team 6	5	1	4	80%

4.4 Survey

The following section presents the empirical data gathered via a survey in the form of a self-completion questionnaire which was distributed to all employees at Zenseact and primarily sought to answer RQ3. The survey further aimed to provide a broader perspective on the data gathered from interviews and confirm or disconfirm prior empirical results generated. The survey also included an open question where employees could write other definitions of success and which factors contributed. Lastly, as the survey was distributed to the whole company, it also created a ground for analyzing different perspectives within different parts of the company. The data is presented in the order described above.

The survey was sent out to 521 employees, and the response rate turned out to be 40%. Thus, the following empirical presentation is based on the answers of 208 employees.

4.4.1 Definitions of success

Based on the findings from the interviews and theory, four different definitions of team-level success were chosen, and employees were asked to rate to which extent they agreed with each definition. The definitions chosen were scope, time, learning, and work satisfaction, described in 4.2.1. For the overall company, respondents agreed to all definitions to some level. However, they agreed the most with team-level success being defined by work satisfaction. The results to this question are displayed in Figure 4.2.

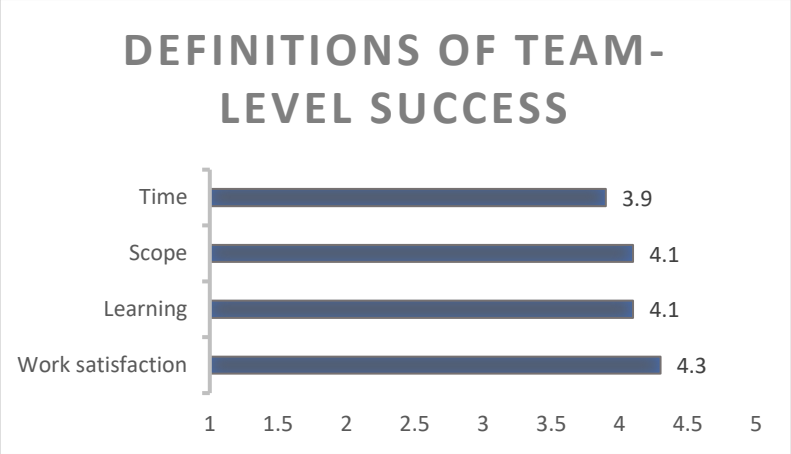

Figure 4.2: The results on how employees agree with the success definitions.

4.4.2 Ratings of success factors

The 13 team-level success factors established from the interviews and described before were the foundation of the survey. Employees were asked to rate on a scale of 1 to 5 (a) how important they considered each factor to be for their team's success, and (b) how satisfied they were with that factor in their team. For clarity, short explanations of each success factor were given with the questions.

All success factors were rated higher than 3.5 in importance, with diversity and physical environment ranked as the least important at 3.6. Trust was rated as the most crucial success factor. Table 4.6 shows the rankings of the success factors based on how important they were perceived and how satisfied employees were with them in their team. Furthermore, the table displays how satisfaction with each factor was rated, showing the difference between importance and satisfaction.

The team-level success factors perceived as having the most significant difference between importance and satisfaction were task satisfaction and organizational procedures. Both factors were deemed higher in importance than satisfaction. Only one factor, physical environment, was rated higher in satisfaction than importance.

Table 4.6: The overall company results for the rankings of the team-level success factors.

No.	Team-level success factor	Importance	Satisfaction	Difference
1	Trust	4.7	4.2	-0.5
2	Communication	4.5	4	-0.5
3	Respect, understanding and acceptance	4.5	4.2	-0.3
4	Task satisfaction	4.5	3.9	-0.6
5	Team morale	4.5	4	-0.5
6	Having a common goal	4.4	3.9	-0.5
7	Team autonomy	4.2	4.2	0
8	Balanced contribution	4	3.7	-0.3
9	Defined responsibilities	3.9	3.5	-0.4
10	Organizational procedures	3.9	3.3	-0.6
11	Purpose	3.9	3.7	-0.2
12	Diversity	3.6	3.5	-0.1
13	Physical environment	3.6	4	+0.4

4.4.3 Other definitions on team-level success and how it can be measured

Besides rating the different definitions of team-level success, employees were also asked to state if they had ideas about other definitions of team-level success. Sixty other definitions of team-level success were provided, and they had the same theme as the interviews; short-term success was defined by the outcome and long-term success by work satisfaction. One employee wrote:

Short term, it's simply a matter of meeting all requirements on time. Long term I wouldn't consider a team successful unless they're continuously building the psychological safety required to become a high performing team that keeps learning and improving.

However, when the researchers synthesized the suggestions, they deemed that many related more to success factors or had the same meaning as the four definitions. Finally, two suggestions for team-level success definitions were formulated from the suggestions: customer satisfaction and team collaboration.

Customer satisfaction was stated to be a definition of team-level success as bringing value to the customer should be the reason for the team's existence. Some employees could relate to previous experience on how customer success can define the success of a team and one wrote that:

I know from previous experience how rewarding and motivating it is with customer feedback. I.e. positive feedback on customer value or recognition of our products in media and press is team success for me.

Team collaboration was the other success definition added by employees. Even though Team collaboration could be seen as relating to Work satisfaction, the definitions provided were more on a team-level and the desire of employees to be a part of the team. One employee wrote:

A loose definition of team-level success is when there is good collaboration in the team. The team members can trust each other with their work and there is a healthy distribution of workload on each member.

One employee also provided a suggestion on how team-level success could be measured:

Allowing the team to have internal KPI that the team themselves define. Gives the team the ownership and understanding on what we want to improve and also seeing the results of Team-success.

4.4.4 Other team-level success factors

Employees were asked two open questions regarding what they saw as the factors contributing to their team's success. The questions were *Which other factors do you feel are important to your team's success?* and *Is there anything vital to your team success that was not asked about in this survey?*

In total, 89 answers were submitted to those questions. When synthesized, two additional team-level success factors were established: competent team members and leadership. Following is a more detailed description of each one.

Competent team members refer to having experienced and competent employees on the team. For example, one employee used these words to describe it:

Being able to attract the right people to our team. It's hard to find good people to join.

Another employee added that as competent employees are scarce, ensuring that each team has a few experienced developers with relevant experience can enhance the team's performance.

Leadership was evident in a plethora of answers. One employee stated the following as a team-level success factor:

Support from Engineering Manager to ensure team members are developing skills or growing in a way they want to.

Furthermore, multiple answers stated the same and said that their team leader or manager was a critical success factor for their team. However, only one employee also stated that self-leadership is a team-level success factor.

5 Analysis and Discussion

This chapter seeks to analyze the empirical findings in relation to the literature presented. The structure of the chapter is as follows: first, how success is defined by the employees of Zenseact is compared to the descriptions from literature. Second, the success factors presented in the empirical data is contrasted against the conceptual framework, thus seeking to analyze the answer to RQ1. Third, the team members' rating of the success factors, the differences between the importance of the success factors and employees' satisfaction with them is examined. This part aims to elaborate on the answers to RQ2 and RQ3.

5.1 Definition of team success

From the interviews, a vast majority revealed how they consider team success as a term with a two-part meaning. Success is mainly seen as both the triumphant completion of projects and as employee well-being and satisfaction. As mentioned in the empirical data, scope, e.g., meeting all requirements, and time, e.g., delivering on time, are considered output-based definitions of success. Consequently, learning and work satisfaction are considered behavioral or processual definitions of success. This view is aligned with the views of Sundstrom et al. (1990), who acknowledge success as both performed output and the team members' inclination to remain on the team in the future. Likewise, the ideas of Guzzo and Dickson (1996), that success is indicated by the team's produced output, the consequences for its members, and its prospects of performing effectively in the future, are supported by the empirical findings. Moreover, this is the same perspective employed by the researchers. The survey largely confirmed this view on success, and one respondent made the distinction between short-term success being more output-focused, whereas long-term success involved a higher proportion of intangible values, such as learning and psychological safety, which also aligns well with the named literature. The Zenseact team members' definition of success can be seen in Table 5.1 below.

Table 5.1: Zenseact employees' view on alternate definitions of success.

Definition of success	Survey score
Scope	4.1
Time	3.9
Learning	4.1
Work satisfaction	4.3

The survey further added two alternative definitions of success: customer satisfaction and team collaboration. Customer satisfaction is used as an indicator of success by Wageman (1997) and is similar to Hoegl and Gemuenden's (2001) description, and this view on success is deemed to put focus on the more output-based element of the term. Customer satisfaction is further rated as "Our highest priority" in the Agile manifesto (Beck et al., 2001), emphasizing its importance. For Zenseact's particular context, with the company yet to deliver a finished product, this view of success is somewhat eye-catching. Although the company has internal deliverables, and there is always a recipient for the teams' work output, this is very seldom an external customer, rather in most cases another team within Zenseact. However, the survey respondent refers to previous experiences when talking about customer satisfaction. This

definition of success may thus be more viable when the company has transitioned more into a producing state.

The other alternative definition of success, team collaboration, is in literature seen as an umbrella term, encapsulating several success factors, i.e., factors mediating success, rather than viewed a success in itself. For example, Dickinson and McIntyre's (1997) model for teamwork, described in 2.4, consists of seven separate factors, and Hoegl and Gemuenden (2001) include six factors in their teamwork quality construct indicating the collaboration in a team. Thus, both mentioned papers frame team collaboration as a success *factor* rather than as a success – it creates beneficial conditions for reaching success but is not the end goal. As mentioned in 4.4.4, team collaboration could further be related to work satisfaction (e.g., Sundstrom et al., 1990), as it may be argued to constitute a part of the employees' overall workplace happiness.

Moreover, the survey uncovered another interesting aspect, which is that work satisfaction is regarded higher as a success than the output-based definitions. The output-related depictions, scope and time, received ratings of 4.1 and 3.9 respectively, whereas work satisfaction was rated at 4.3 and was thus the highest rated of the success definitions. Also notable is that learning was rated at 4.1, the joint second highest together with scope, which supports Edmondson's (1999) arguments of attainment of novel knowledge as a success.

5.2 Team-level success factors

With the constructed conceptual framework as a foundation, each framework category has been analyzed and compared to the success factors identified during the data collection of this research. The identified success factors from the data collection have accordingly been assigned to a relating category of the conceptual framework. Overall, the findings coincide well with the literature, although some results deviate from the framework which will be further elaborated on later in this chapter. How each identified success factor fits the framework can be seen in Table 5.2 below.

Furthermore, how each success factor from literature relates to the identified success factors from the data collection, and their deducted strength of relationship, is displayed in Figure 5.1. The strength of relationship between the literature success factors and the success factors identified during the data collection was determined by comparing the description of the success factors in literature with the success factors from the data collection. Success factors with identical, or very similar, phrasings or inherent meanings in the literature and the data collection were considered strongly related and were thus connected with a green line. This was seen with, e.g., the success factor communication, which was stated identically in the literature and the interviews. Accordingly, success factors in literature and the data collection with only similar phrasings and inherent meanings were considered less strongly related and were thus connected with a blue line. An example of this is the connection between the success factor balanced contribution, identified in the interviews, and behavioral norms, which was found in literature. Furthermore, success factors sharing only partly similar phrasings or inherent meanings in the literature and the data collection were connected with an orange line, as their relationship were deemed weak. This was exemplified in the connection between the success factor organizational procedures, which was mentioned in the interviews, and managing team boundaries, which was brought up in literature.

Table 5.2: How the success factors from the data collection match the success factors from literature.

	Success factors from literature:	Success factors from data collection:
Organizational context and design	- Physical environment. - Task design. - Training. - Authority to self-manage. - Managing team boundaries. - Understanding the task. - Team size. - Team composition. - Organizational culture	- Physical environment. - Team autonomy. - Defined responsibilities. - Organizational procedures. - Diversity. - Competent team members.
Team behavior	- Communication. - Feedback. - Helping attitude. - Coordination. - Norms regarding behavior. - Norms promoting strategic thinking. - Monitoring performance. - Trust team to perform. - Workload sharing. - Exploit member expertise. - Shared mental models.	- Communication. - Balanced contribution.
Motivation	- Common mission/purpose. - Team rewards. - Performance goals. - Seeing impact. - Finding meaning. - Team orientation. - Task dependency. - Task variety. - Task importance.	- Purpose. - Having a common goal. - Task satisfaction. - Team morale.
Team development	- Leadership. - Cohesion. - Psychological safety. - Team learning.	- Respect, understanding, and acceptance. - Trust. - Leadership.

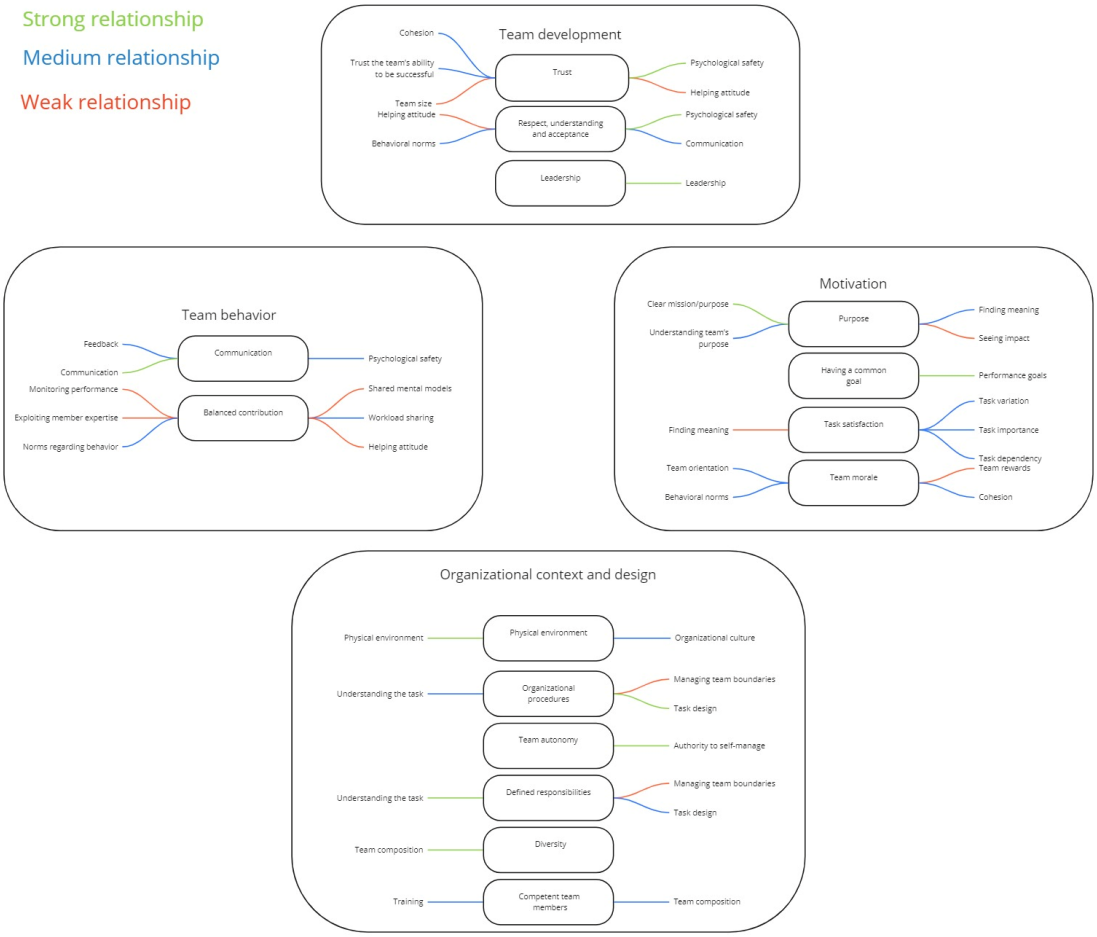

Figure 5.1: Alleged connections between success factors from literature and identified success factors

This section portrays how the findings match with the team-level success factor framework, following the framework's order of relationships. Thus, this section will answer and analyze RQ1 (i.e., what the team-level success factors at Zenseact are). RQ2 (i.e., how these team-level success factors can be measured) will be treated in 5.4. For each framework category, the empirical findings from the interviews and the observations will be analyzed. The survey results will further be elaborated in 5.3, which consequently will answer RQ3 (i.e., which of these success factors are considered the most important from the team-level perspective).

5.2.1 Organizational context and design

The first category of the framework holds the context- and design factors impacting the team-level success. To this category, physical environment, team autonomy, defined responsibilities, and organizational procedures have been identified from the interviews. Further, competent team members was mentioned as a success factor in the survey and has also been assigned to this category.

Physical environment

From the interviews, the physical environment was brought up as a parameter affecting the teams' success. Having a pleasant office in an attractive location was thought to improve the team's well-being and ultimately their work output. Furthermore, providing employees the authority to be flexible with where to conduct their labor was also believed to achieve the same result. Here, a parallel can be drawn to Wageman (1997) who discusses basic material

resources as imperative for constructing successful teams. Although basic material resources may seem slightly rudimental, Wageman (1997) emphasizes that the organization must provide the teams with the physical resources that is required for their work, which pleasant offices can be argued to represent. Sundstrom et al. (1990) likewise support this and argue that a team's environment may both inhibit or stimulate external change, thus making it a significant element for its effectiveness. Moreover, organizational culture, which is described as a success factor by Sundstrom et al. (1990) can be related to the physical environment, as it may be argued to permeate the organization's working atmosphere.

Team autonomy

Allowing employees to be flexible with their working locations can likewise be argued to relate to their authority to self-manage, which is a critical contextual success factor (Wageman, 1997; Campion et al., 1993). Although being able to choose your working location is only a fractional part of a team being self-managing, it could arguably be a part of it, thus possibly facilitating higher levels of decision-making authority for the team. The concept of team autonomy was further highlighted as a team-level success factor in the data collection. Specifically, the team having the freedom to be creative and to decide on their ways of working was deemed essential for achieving team-level success. This was exemplified during the PI planning days, with the organization leaving the choice of where to work from up to the teams by arranging all ART meetings in a hybrid format, enabling both physical and digital participation. This autonomy is also related to Wageman's (1997) statement of the team's needs to possess authority over work strategies to be successful, and to Campion et al.'s (1993) discussion of a successful team's requirement for autonomy. Interestingly, during the observation study, a certain lack of autonomy within teams was witnessed. Teams were provided the authority to take decisions on their own but were still very reliant on their Product Owner to decide on how much time to devote to tasks, and to proceed with the meeting agenda. This could be argued to highlight a certain misalignment between the team members' perception of autonomy, and what it actually signifies. Further, this somewhat counter e.g., Wageman (1997) who implies that by allowing teams to decide on e.g., strategies and prioritization they will be more effective and do so with a higher level of engagement. Campion et al. (1993) likewise emphasize that all members should be able to participate in decisions, which they in this case seemingly were allowed to, but did not do. It should be noted that the researchers only observed the teams for a limited amount of time, making it difficult to draw too large conclusions out of this phenomenon, but it poses an interesting subject for future research.

Defined responsibilities and organizational procedures

Two related factors, defined responsibilities, and organizational procedures, which concern, e.g., knowing what is expected of you, and the flow of assignments and communication chains within the company, were stated as components impacting the teams' success. These factors exhibit some resemblance to the element of understanding proposed by re:Work (n.d.). Clarity in how tasks are assigned, and the official line of communication may be argued to increase the understanding of the task at hand, or, at the very least, lower any eventual confusion concerning the assignment. This can also be related to task design (Sundstrom et al. 1990; Wageman, 1997), as clarity in how tasks are assigned and what they comprise may ensure that the task at hand does in fact require a team effort for completion. Further, managing team

boundaries, which is postulated as a success factor by Sundstrom et al. (1990) and Campion et al. (1993) can be connected to the notion of organizational procedures. In addition, through clear communicational paths, the inter-team interactions may be improved and ease the process of teams asking other teams for, e.g., assistance and updates. The 4Ps could be seen as one measure taken to clarify the teams' procedures and ways of working. However, the effort put into the 4Ps varied considerably between teams, with some teams not having updated theirs for a long time, and some teams had no 4Ps. It could thus be argued that with accurate and continuously updated 4Ps, more clarity regarding the defined responsibilities and organizational procedures could be achieved.

Diversity

Diversity within the team was further suggested as a success factor by several interviewees. Having a team with heterogeneous competences, experiences, and backgrounds, was argued to put the team in a better position to be successful. Further, based on the documentations about their teams, Zenseact aims to obtain some level of diversity in them by assigning them members with varying skillsets. This is supported by Campion et al. (1993) who argue that teams with diverse and flexible skills typically are more effective than homogeneous teams.

Competent team members

From the survey, one additional success factor was distinguished: competent team members. This factor may appear as rather obvious – all team members should be qualified to do the job they are employed to do – which may explain why it was not mentioned during the interviews. However, this factor can be related to Sundstrom et al. (1990) and Campion et al.'s (1993) discussion about the need for relevant training and resources to the teams, ensuring that they are competent to do what is required of them. Furthermore, a parallel can be drawn to team composition, which is stated as a success factor by Campion et al. (1993), and at a basic level includes that team members should be proficient at what they do.

5.2.2 Team behavior

The next level of the framework is Team behavior. The factors identified from interviews included in this category are communication and balanced contribution. These will be discussed in this chapter, followed by an analysis of success factors from literature that did not align with the ones identified during the data collection.

Communication

Communication was stated as consequential by all interviewees. The interviewees postulated that the communication should be transparent and that it ought to be frequent. The importance of communication is also emphasized in literature. As stated previously, Dickinson and McIntyre (1997) regard communication as a crucial enabler for the attainment of other success factors, and its importance as a success factor is further highlighted by Sundstrom et al. (1990), Campion et al. (1993), Dingsøyr et al. (2016), and Hoegl and Gemuenden (2001). The latter advocate spontaneous, informal communication as crucial for team performance, which, based on the data collection, seems to take place on Slack, where several channels (e.g., "random" and "whine") were devoted to this matter, but not much occurring during the teams' meetings. The random channel was further the third most frequently used and the whine channel the

seventh. The frequent use of these channels may imply that Slack is considered the main vehicle for informal communication within the organization.

Moreover, timely and accurate feedback, which is proclaimed as essential by, e.g., Sundstrom et al. (1990), Campion et al. (1993), Dingsøyr et al. (2016), and Hoegl and Gemuenden (2001), could be seen as a method to promote frequent communication, and by keeping clear protocols of each meeting, the transparency can be enhanced, making the content of the meeting visible to people, team members, and external stakeholders that could not participate. Zenseact already has an institutionalized system for timely feedback with the retrospective meetings. However, opinions on the retrospective meetings conflicted among interviewees, indicating that these meetings may not be operated in an optimal way. Worth to mention here is that continuous reflection is also one of the agile principles (Beck et al., 2001), and subsequently, events for reflection, such as Zenseact's retrospective meetings, should be implemented by any organization following agile methodologies. Furthermore, the 4Ps can be seen as a measure of increasing the transparency and frequency of communication, as it should include e.g., a team's values and ways of working. By including how the team wants to communicate, this factor could potentially be improved. As previously mentioned, the 4Ps are currently not fully utilized, and it would presumably require a higher level of engagement and effort put into them for this to be functional.

Furthermore, getting every member to speak during meetings was regarded as a particularly important aspect of communication. This element is not specifically addressed in literature but can be assumed to be included in the named authors' depictions of communication. As several of these authors (e.g., Dingsøyr et al., 2016; Sundstrom et al., 1990) accentuate that an increased amount of communication raises the team's prospect of success, getting every team member involved in the communication would likely assert this. This was also seen during the observation studies. In several teams, not all team members participated in the meeting dialogue, leaving the conversation to a few team members. At some points, relevant matters were not treated in the ART meetings, although they were prompted by management, only to be brought up during the individual team meetings. The opposite issue was also witnessed: at times, questions from members were brought up during the ART meetings but instead of receiving a clear answer, the meeting moderator did not show any desire to engage in a discussion and asked the question asker to stick around for a few minutes after the meeting and the dialogue quickly faded out. As was revealed during the interviews, this is something that employees are aware of but a clear remedy to the issue has not been found. The issue could be related to trust and psychological safety (Edmondson, 1999), as a higher level of trust and psychological safety within the team would assumingly lead to members finding it simpler to raise their opinions and not avoiding uncomfortable subjects. Communication and trust can thus be argued to be intertwined on this matter.

Balanced contribution

The last identified factor in the Team behavior category is having a balanced contribution among the team members. This was agreed by most interviewees, who meant that for the complex tasks that the teams were assigned to solve, every member's expertise and effort were required. Hoegl and Gemuenden (2001) express how exploiting all team members' specific knowledge is an important success factor, which is aligned with these interviewee

considerations. Furthermore, Hoegl and Gemuenden (2001) discuss setting team norms concerning the effort to be put in, and how to prioritize the team's work versus other endeavors as significant. Connecting this to a team's potential balanced contribution, the establishment of such norms could be seen as a prerequisite to reaching the desired state. Three other potential enablers of a balanced contribution are the success factors, shared mental models, described by Dingsøyr et al. (2016) as commonly held knowledge within the team; monitoring team performance (Dickinson & McIntyre, 1997); and workload sharing (Campion et al., 1993). By members possessing knowledge of each other's tasks, there is a continuous awareness of individual efforts and performances, and there is a willingness to share the work between members with different assigned work volumes and time constraints, a balanced contribution could be argued to be more easily obtained. Moreover, this evidently likewise relates to assisting each other within the team, which warrants team member with a helping mindset (Dickinson & McIntyre, 1997; Campion et al., 1993; Hoegl & Gemuenden, 2001).

Absent literature factors

In the literature, one frequently mentioned factor in the Team behavior category was coordination, which was brought up in three separate papers (Dickinson & McIntyre, 1997; Hoegl & Gemuenden, 2001; Dingsøyr et al., 2016). Interestingly, this factor was not highlighted by any of the interviewees during the data collection. One reason for this could be that coordination may be seen as an outcome of having defined responsibilities, clear organizational procedures, and communication. Dingsøyr et al. (2016) postulate that coordination concerns managing dependencies between activities and is facilitated by communication. Thus, if there are clear organizational procedures and responsibilities, and a team exhibits extensive communication, coordination could be argued to be rather easily attainable. This further supports Dickinson & McIntyre's (1997) arguments of coordination being an output of the stimulation of other success factors. Moreover, the PI planning can be seen as an institutionalized process aimed at coordinating the work between teams and the whole ART. Thus, coordination efforts are evidently made within the organization, although they may not be considered vital by the team members. It is further worth noting that the coordination occurring at the PI planning were seemingly primarily aimed at coordinating the work between teams and their external teams, and not the work within the team. Thus, it goes beyond the scope of this study.

Moreover, Wageman (1997) discusses norms promoting strategic thinking as a crucial success factor, to which she accredits a team's capability to be flexible in its approach to a problem. This was not identified during the data collection. One reason could be that this is considered a very rudimental element – for teams in an organization in a dynamic and rapidly changing environment it could be argued to be a prerequisite, thus not a distinguishing factor of a successful team. Another possible explanation is the opposite – that the teams' assignments vary so little in character that a flexibility in how to approach them is not required. However, based on the company's context and the environment in which they operate, the first explanation seems more likely.

5.2.3 Motivation

The next category in the framework is Motivation. This class comprises the success factors purpose, having a common goal, task satisfaction, and team morale identified during the interviews, which will be analyzed in the following section.

Purpose

Multiple interviewees bespoke working towards a higher purpose as consequential for their teams' success. More specifically, the company's purpose of depleting the number of causalities in traffic and seeing the impact of the team's work were considered motivational enhancers. This is well aligned with what literature states. Zenseact's mission of diminishing road accidents through the usage of autonomous vehicles is a distinct example of what Sundstrom et al. (1990) elaborate as a clear mission within the organization, which they advocate is an important team-level success factor. Campion et al. (1993) and re:Work (n.d.) agree that seeing the impact of the work is raising the team's motivation and also speak about finding meaning in either the work itself or the outcomes as important for the team's effectiveness. From the data collection, it was evident that people also had their own individual purposes. Hence, purpose can be seen to engage on different levels. Some talked about seeing the software they developed in a car on the street, which can be seen as a micro-level purpose, while others found the objective of making road traffic safer appealing, which arguably is more of a macro-level purpose. Regardless of what purpose the employees chose for themselves, this adequately aligns with re:Work's (n.d.) notion of meaning. Moreover, this could also be connected to Wageman (1997) and her argumentation that a team must understand its purpose – why they exist, which she means increases the motivation within the team and ultimately its prospect of being successful. Wageman's (1997) statements could be related to the 4Ps, where one of the Ps is explicitly describing the team's purpose - why they exist.

A case could be made that an intriguing purpose is particularly relevant due to Zenseact's context. As the company is not yet in a producing state, it may be difficult for employees to find motivation from seeing their work in a finalized product, as this finalized product is yet to exist. Thus, having an enthralling purpose within the organization can be argued to raise employees' encouragement.

Having a common goal

The next identified success factor is having a common goal within the team. This factor is related to purpose but encapsulates more tangible parameters required to reach the purpose. Having a common goal as a team, and being committed to it, was deemed as important for motivation, which gains support from literature. However, the characteristics of the common goal, e.g., output-based or behavior-based, were not clear from the interviews. Working towards a common goal is framed as a success factor by Dingsøyr et al. (2016), who further state that the team themselves should construct the objectives and that they will guide the team's actions. However, Dingsøyr et al. (2016) emphasize that these goals should be long-term, and milestones should be set along the way, which was not something brought up by the interviewees. Common objectives are also agreed upon by Wageman (1997), who states that setting clear performance goals is crucial for the team's success, and that these should be aligned with the organization's objectives. Campion et al. (1993) likewise highlight that

individual members' goals should be connected to the organization's in order to make the team more effective.

Task satisfaction

Assignments that were well-defined and appropriate were generally considered a success factor by the interviewees. Furthermore, wasteful, and tedious tasks were thought to decrease the motivation in the team, leading to an inferior performance. Satisfying tasks is not explicitly treated in much of the literature, but a link could be made to Campion et al.'s (1993) elaboration of task dependency, task importance and task variation. Tasks should be perceived as important and depend on one another to boost the team's motivation and effectiveness. Further, a variety of what the tasks comprise can enhance the team's encouragement (Campion et al., 1993). It could therefore be argued that wasteful and monotonous tasks share no logical dependency with each other, diminishing both motivation and effectiveness. This also resembles re:Work's (n.d.) description of finding meaning in the work as a crucial success factor. If a task is regarded as important by the team assigned to it, it likewise ought to be perceived as meaningful.

Besides Campion et al. (1993) and re:Work (n.d.), a clear connection with the other papers cannot be justified. It could be advocated that the presence of, and commitment to, a purpose and common goals may counteract a lack of satisfying tasks, maintaining the motivation at a higher level despite periods of less attractive assignments.

Team morale

The last success factor of this category is team morale, which all interviewees posed as a success factor. Having a positive atmosphere within the team and having fun together, together with certain attitudes to make team members feel that they are part of a team and not just a collection of individuals, where deemed critical for successful teamwork to arise. These attitudes can be attributed to Dickinson and McIntyre's (1997) notion of team orientation, which concerns team members' stance towards each other and themselves. There is also a connection to be made to Sundstrom et al. (1990) and their conviction of behavioral norms, described in the Team behavior category. These norms may be argued to enable a foundation for a positive team morale. The notion of cohesion (Sundstrom et al. 1990; Dingsøyr et al. 2016), which is described as the team members' desire to stay within the team in the future, could be connected to team morale - a positive atmosphere in the team and enjoying spending time together would arguably result in a stronger cohesion. Furthermore, the interviewees accentuated celebrating triumphs, both large and small, as a factor contributing to a positive team morale. A parallel could be drawn here to Wageman (1997) and Sundstrom et al. (1990), who claim that team rewards are a feature of a successful team. Although celebrations must not necessarily be rewards, a reward could be argued to be represent a form of celebrations. The rewards should further be on a team-level, rewarding the whole team and not just a few individuals (Wageman, 1997; Sundstrom et al., 1990).

5.2.4 Team development

The final category of the framework is Team development, which differs from the prior categories since it portrays a desired state where the teams are developing and thriving. This state is dependent on the triumphant achievement of the success factors in the other categories.

Thus, the Team development success factors are in many instances higher order adaptions of the success factors in these categories. Included in the Team development category are respect, understanding, and acceptance (RUA), and trust, identified from the interviews. Further, leadership, which was raised as a success factor in the survey and is also included in this category. These will followingly be treated next.

Respect, understanding, and acceptance

The first factor in the Team development category is respect, understanding, and acceptance (RUA), which was deemed essential by all but one interviewee. This factor is argued to be tightly linked to trust and communication, as interviewees framed being able to honestly express how they were feeling as a significant success factor. Although RUA are not explicitly mentioned in literature, RUA can be argued to be a fundamental part of psychological safety (re:Work, n.d.), which encapsulates both trust and communication. A connection can further be made to Sundstrom et al.'s (1990) discussion about behavioral norms, which they advocate is a feature of effective teams. These norms could concern aspects of respecting and accepting each other's living situation, values, and opinions. Moreover, the notions of social support (Campion et al., 1993) and a helping attitude (Hoegl & Gemuenden, 2001; Dickinson & McIntyre, 1997) are also argued to be applicable here, as teams with respect, understanding, and acceptance may help a team member in need.

As stated by re:Work (n.d.) and Edmondson (1999), psychological safety means that you can express your opinions and take risks without the threat of being ridiculed or lose any social status. This arguably warrants inter-team trust, and respect, understanding, and acceptance of each member's values, competences, and feelings. From the observations, a potential lack of psychological safety was witnessed in the previously discussed team meetings. On several occasions, team members sat quiet until they were directly asked a question, and when a subject was brought up for a joint discussion, there was seldom more than two or three people talking. The same issue was evident in the larger ART meetings, with the same number of people elaborating on a certain topic, relevant to multiple ART members. Although it is difficult to draw too large conclusions from the observation of a few teams' meetings, it may indicate that the team- and ART meetings are not considered a fully psychologically safe environment.

Trust

One commonly mentioned success factor in the interviews was trust. Trust, exemplified in, e.g., not blaming each other for mistakes made, daring to try things, support from the team, and that team members felt comfortable to be themselves within the team, was considered crucial for the team's success. Among the literature used for the framework, no one explicitly mentions trust in the same context as was presented during the interviews, but it is implicit in several papers. Campion et al. (1993) discuss that a team must trust its own ability to succeed with its endeavors, which is aligned with re:Work (n.d.) who states that team members must trust each other's competence to perform their individual assignments. These perspectives inevitably treat trust, but their interpretation of trust is not the same as the interviewees', who accentuated a more inter-personal perspective of trust. More aligned to the data collection results are Sundstrom et al. (1990) and Dingsøyr et al. (2016), who state that cohesion, which trust can be argued to be a component of, is of high significance to a team's effectiveness. RUA, described

in the previous section, can further be argued to be a component of trust. Thus, the discussion in that section is likewise relevant for trust.

Harnessing a helping attitude, which is highlighted as an important success factor by Dickinson and McIntyre (1997) and Hoegl and Gemuenden (2001), could further be seen as an element of trust. If a team exhibits a helping attitude, members should have the courage to ask their peers for assistance, which can be categorized as a measure of trust. This is also aligned with Campion et al.'s (1993) depiction of social support, which they refer to as the team's willingness to assist each other and have appreciative interactions. As previously mentioned, trust can also be argued to constitute a cornerstone of psychological safety (re:Work, n.d.), as feeling comfortable to speak your mind requires a certain level of trust in your audience not to ridicule you.

For establishing trust within the team, interviewees emphasized the team size, how long the team had worked together, and physical interaction as cornerstones. Team size is brought up as a success factor by, e.g., Campion et al. (1993), but their rationale is not directly related to trust; rather they state that a too large team quickly grows dysfunctional due to the increased amount of coordination required. The amount of time a team has worked together can further be argued to relate to RUA and to team morale. If the team has spent a good amount of time together, they ought to have got to know each other and potentially built a certain level of RUA and established certain behavioral norms.

That physical interaction facilitates trust-building is not explicitly mentioned in literature but was accentuated in several interviews. Sundstrom et al. (1990) postulate that physical interaction and proximity may raise the informal communication between team members, which could possibly lead to more trust, as communication facilitates the achievement of several other success factors (Dickinson & McIntyre, 1997). Face-to-face conversation, one mode of physical interaction, is further regarded as the ideal way of transferring information by the Agile manifesto and is one of the principles of agile (Beck et al., 2001). One interesting thing regarding physical interaction as a building stone for trust is that during the observations of teams, the team norm seemed to be to have one's camera turned off in virtual meetings. Although remote meetings by definition cannot be seen as a physical interaction, having one's camera turned on arguably makes the interaction more similar to a physical one.

Leadership

The next Team development success factor is leadership. Literature states that leadership is not exclusive to management, but should be exercised by all team members, especially in a self-managing context (Dickinson & McIntyre, 1997; Sundstrom et al., 1990). Leadership was highlighted in the survey as an important success factor, however, the vast majority of respondents focused on the leadership from their superiors (e.g., Product Owner and Engineering Manager), whose leadership they acknowledged as important for the team's growth. Although this view is not entirely misaligned with literature, it clearly disregards the leadership from the individual team members. From the multiple survey comments about leadership, only one treated self-leadership within the team as a success factor, which could illuminate a lack of individual leadership within the organization. This was further something witnessed during the observation study: in several teams, members left the proceedings and

discussions of meetings topics to their Scrum Master or awaited their Product Owner's presence before making decisions – initiatives by members to progress the meeting agenda were scarce. One possible explanation could here be a lack of psychological safety, as an individual member effort of trying to govern the meeting arguably can be considered a social risk-taking. It can further be related to team autonomy and that members perceive that they do not have the authority to take the steering wheel in their team's undertakings.

Absent literature factors

Learning was the only developmental team-level success factor not witnessed during the data collection. As was described in 2.5, learning is strongly correlated to feedback, asking questions, and reflection (Dingsøyr et al., 2016), which all go into the communication success factor of Team behavior. Based on the data collection, learning was not identified as a success factor among either the interviewees or the survey respondents. However, the factor was rated at a joint second place, with a score of 4.1, in how employees defined success, which may explain its absence among the success *factors*. Put more simply, interviewees posed learning as a desirable outcome, whereas Dingsøyr et al. (2016) rather consider learning a mediating factor for a desirable outcome. This aligns quite well with the developmental nature of the success factor – learning is a result of the interplay among other success factors and is thus not as rudimental as success factors in other categories.

As mentioned, communication plays a valuable role for stimulating learning, and Zenseact's institutionalized sessions of feedback and reflection, the retrospective meetings, can be seen as a measure for increasing learning. Furthermore, learning is likewise akin to psychological safety. Edmondson (1999) concludes that psychological safety contributes to a learning behavior within the team because individuals may feel that they are putting themselves to risk by e.g., asking a question or ask for assistance. Thus, the notion of a helping attitude (Campion et al., 1993; Dickinson & McIntyre, 1997; Hoegl & Gemuenden, 2001) is also applicable here. From the observation study, it was noted that questions regarding the team's work were asked during the meetings. With the researchers' limited technical knowledge, it is however difficult to know whether all potential misconceptions were brought up. Nevertheless, comparing the ART meetings with the teams' meetings, some team-relevant questions during the ART meetings were only treated later, in the individual teams' sessions, which indicates that psychological safety is not fully prospering at the company.

5.3 Analysis of survey results

This section discusses the answer to RQ3, by comparing how important the different success factors were perceived by Zenseact's employees. To ensure clarity, the survey results will be presented using the same categories presented in the conceptual framework. As the success factors leadership and competent team members arose from this survey, their importance and employees' satisfaction with them have not been recorded and they are therefore excluded from this analysis. It should further be noted that as the perceived importance of several success factors was very similar, it may be difficult to draw too substantial conclusions from these results.

5.3.1 Survey results for Organizational context and design

Out of the success factors in this category, team autonomy received the highest ranking, being perceived as the seventh most important success factor in total. Table 5.3 shows the success factors for this category and their overall rankings from the survey.

Table 5.3: Ratings of success factors in the category Organizational context and design.

No.	Success factor	Importance	Satisfaction	Difference
7	Team Autonomy	4.2	4.2	0
9	Defined responsibilities	3.9	3.5	-0.4
9	Organizational procedures	3.9	3.3	-0.6
12	Diversity	3.6	3.5	-0.1
13	Physical environment	3.6	4	+0.4

As mentioned in section 2.2, team autonomy is also thought to impact the motivational aspects of work, with employees' intrinsic motivation raising with a higher level of decision-authority of their work. However, as the level of autonomy ultimately is determined by the organization, it is considered a contextual factor.

Further, organizational procedures and defined responsibilities both received a score of 3.9, placing them on joint second place among the contextual factors. That the two factors' score is equal is hardly surprising; organizational procedures state how things should be done in the organization more generally, and defined responsibilities describe the obligations and roles of each team member. However, the two factors' position as substantial success factors is in itself somewhat unexpected, as they may be argued to oppose the very concepts of agile methodologies. The methodologies possess an inherent dynamism and explicitly state their desire to reduce the heavy reliance on procedures and tools and embrace a complex and uncertain business environment in a more flexible and nimble way (Williams & Cockburn, 2003). Thus, too strict organizational procedures and excessively defined responsibilities may decrease the organization's ability to work in an agile way. Nevertheless, the agile methodologies do acknowledge that there is still a need for processes, plans, and tools, rendering it difficult to draw too significant conclusions from the success factors' presence.

Diversity received a score of 3.6, the joint lowest score of the context- and design factors together with physical environment. As diversity encapsulates several different dimensions, it can be interpreted in several ways. One way of interpreting the results is that the employees are not valuing heterogeneity in abilities, backgrounds, and experiences as crucial. Many employees share a common educational and professional background, which could explain why heterogeneity is not highly regarded. Another interpretation is that the inclusion of different competencies, backgrounds, ethnicities, and genders are not considered important for the teams' success, or that it might be seen as self-evident and thus not worth highlighting. Finally, due to the term's broad meaning, respondents likely have interpreted it differently, complicating any clear-cut conclusions to be drawn from its rating in the survey.

5.3.2 Survey results for Team behavior

Out of the two success factors in this category, communication received the higher ranking, being perceived as the second most important success factor. Table 5.4 shows the success factors for this category and their rankings from the survey.

Table 5.4: The ratings of success factors in the category Team behavior.

No.	Success factor	Importance	Satisfaction	Difference
2	Communication	4.5	4	-0.5
8	Balanced contribution	4	3.7	-0.3

Communication's prominent status as a success factor is further supported in literature. As elaborated in section 5.2.2.1, about communication, the factor is commonly seen as an enabler of the positive attainment of other success factors (Dickinson & McIntyre, 1997; Dingsøyr et al., 2016). However, the survey results illuminate a gap between what team members perceive as important and how they act. Based on the previously described observations, the inter- and intra-team communication did not exhibit full participation of all team members, and very little informal communication (i.e., conversations unrelated to team endeavors) took place, which is framed as an essential success factor by Dingsøyr et al. (2016). It should be noted that the researchers only participated in the meetings of six teams within one ART, besides the overall ART meetings, which makes it difficult to state that this is a company-wide issue. Nevertheless, it is something that Zenseact may consider improving.

Balanced contribution was rated as important by the employees, however, not as significant as communication. As was recognized during the interviews, it may be difficult to obtain a completely equal effort from all members since the team's tasks vary in nature, requiring different levels of skills. This judgement may be shared among other employees, decreasing the importance of this specific success factor. A parallel could be drawn here to Hoegl and Gemuenden's (2001) reasoning that for a team to perform optimally, every member's specific expertise must be exploited. As different tasks require different competences, this implies that the contribution between members might vary, depending on the assignment at hand. Further, the inevitable unbalanced contribution can be referred to a lack of shared mental models. Dingsøyr et al. (2016) postulate that shared mental models is common knowledge held within the group, making the division of tasks more flexible, as team members are not restricted to one type of tasks. Furthermore, using an exclusively output-based view of success, having a balanced contribution within the team can be deemed as less essential – if the output meets the quality standards required, the process of producing it is subordinate to the end results, regardless of it was made by one person or the whole team.

5.3.3 Survey results for Motivation

The survey displayed task satisfaction and team morale as the highest rated success factors in the Motivation category, holding the fourth and fifth place of the overall success factor ranking. Further, having a common goal was ranked at sixth place with a score of 4.4, and purpose at joint nineth place with a score of 3.9. Table 5.5 displays the ratings for the success factors in this category.

Table 5.5: The ratings of success factors in the category Motivation.

No.	Success factor	Importance	Satisfaction	Difference
4	Task satisfaction	4.5	3.9	-0.6
5	Team morale	4.5	4	-0.5
6	Having a common goal	4.4	3.9	-0.5
9	Purpose	3.9	3.7	-0.2

The high rating of team morale could be argued to accentuate how much Zenseact's employees treasure the inter-personal success factors, such as team morale, communication, respect, understanding, and acceptance, and trust. Furthermore, it resembles Zenseact's values and culture well, where employees are put at the center of actions.

Something that is interesting is the relatively elevated ranking of task satisfaction. As this factor does not frequently figure in literature, it could be postulated that it would not receive such a prominent ranking. One possible explanation could be that satisfaction with the assignments could be seen as a very basic need of employees, which ought to be seduced by the job position itself, rendering it too rudimental to be framed as a success factor in the eyes of these authors.

Another notable thing from the survey results is that having a common goal is rated higher than purpose. The two factors are inevitably intertwined, with purpose being more of a long-term vision, and having a common goal more tangible and short-term. However, Dingsøyr et al. (2016) argue that a purpose is needed to provide weight to the common goals, and Wageman (1997) advocate that a team's understanding of its purpose interplays with its common goals. Thus, at least in literature, these two factors could be argued to be equally crucial for a team's success. It should be noted, however, that the survey contained limited information about the different success factors. Therefore, there is a possibility of misinterpretation of the complete meaning of the success factors on the behalf of the respondents.

5.3.4 Survey results for Team development

The Team development category displayed the highest regarded success factor in trust, with a score of 4.7. Further, RUA was ranked joint second highest together with communication, receiving a score of 4.5. Table 5.6 shows the ranking of the factors. An interesting finding here is the high significance of what can be perceived as softer factors.

Table 5.6: The ratings of success factors in the category Team development.

No.	Success factor	Importance	Satisfaction	Difference
1	Trust	4.7	4.2	-0.5
2	Respect, understanding and acceptance	4.5	4.2	-0.3

The actuality of trust being ranked as the foremost crucial success factor comes as no surprise based on the interviews. Trust was emphasized by the entire interview sample, with interviewees arguing that it both contributes to superior performance and a higher work satisfaction. However, it is interesting that inter-personal trust is not explicitly stated as a success factor in literature. As has been depicted previously, trust is present in several of the papers used (Sundstrom et al., 1990; Dickinson & McIntyre, 1997; re:Work, n.d.; Campion et al., 1993; Hoegl & Gemuenden, 2001; and Dingsøyr et al., 2016), but only implicitly. These works describe trust but either a specific type of trust, e.g., trusting the team's ability (Campion et al., 1993), and trusting each team member to complete their tasks (re:Work, n.d.), or incorporated into other success factors, e.g., helping attitude and cohesion. It could be that these papers take the more holistic view of trust for granted, and thus try to narrow down more specific success factors embodying trust.

RUA is similarly highly rated as a success factor among Zenseact employees but lacks concrete support from literature. One explanation may be that this factor can be argued to create a

foundation for building trust and psychological safety. Thus, the opposite issue of what was contemplated about trust in the previous paragraph can be argued to arise; Sundstrom et al. (1990) postulate that behavioral norms are essential for team success. Behavioral norms are advocated to belong at a higher level of abstraction than RUA as the behavioral norms may include these aspects. On the contrary, cohesion (Sundstrom et al., 1990; Dingsøyr et al., 2016), psychological safety (re:Work, n.d.), and a helping attitude (Campion et al., 1993; Dickinson & McIntyre, 1997; Hoegl & Gemuenden, 2001) can be seen as team characteristics which arise from a team exhibiting RUA making the connection to the identified success factor increasingly complex.

5.4 Measurement of success factors

The aim of RQ2 was to distinguish how the identified success factors could be measured. As they are of a predominantly intangible nature, it could be argued that they are inherently difficult to quantify. Literature presents no clear measuring tool, thus the methods to measure these factors are based on the empirical data and the researchers' own interpretations of the results.

From the data collection, three different ways of measuring the identified success factors were stated: managerial observations, one-on-one conversations with managers, and surveys. Managerial observations and conversations could pose as means for measuring the levels of satisfaction with the success factors. However, as the factors have a rather subjective meaning and the measuring will inevitably be biased by the manager's values and opinions, these methods may be difficult to standardize and scale. There is also a risk of getting biased results, as they would be impossible to anonymize. Should team members not feel psychologically safe enough to be completely honest about how they feel, there is a potential pitfall of success factors' satisfaction being rated higher than they should.

Another postulated measuring tool was to conduct surveys for measuring employees' perception of importance and their satisfaction with different success factors. Like the survey used for this research, such a survey would ask employees to rate how important they considered the team-level success factors, and how satisfied they are with them. Unlike the two previously proposed methods, a survey is easily standardized and scalable, and would guarantee employees' anonymity, increasing the likelihood of receiving honest responses. It was also suggested that open questions should be added in order for employees to express disagreements or provide novel success factors to consider. Nevertheless, the respondents' judgements would ineludibly be subjective and likely dependent on context. Therefore, it was suggested that instead of measuring the absolute numbers of the satisfaction of the success factors, this survey should be conducted recurrently, e.g., every sixth month, and the unit of analysis would be the change in importance and satisfaction. Thus, the subjective elements of the ratings may be diminished, and the organization would readily be able to observe in which direction the success factors have advanced. Hence, the survey used for this study could be seen as an example of a tool for measuring team-level success factors.

It should be noted that managerial observations and conversations may still provide value for measuring the success factors, however more in support to a survey than as a predominant measuring method.

5.5 A gap analysis between importance and satisfaction

The following section presents a gap analysis, analyzing the interstice between the employees' perceived level of importance and satisfaction of the success factors. The primary purpose of the gap analysis is to identify the discontinuity between the current state of the teams and the desired future state. The researchers argue that an analysis of this sort is helpful for targeting actions aimed at increasing team-level success by raising the levels of satisfaction of the highly important factors.

As was analyzed in section 5.3, all the 13 defined team-level success factors are somewhat crucial for the teams to be successful. However, the data from the survey showed that some were perceived as more significant than others. Therefore, the desired future stage is argued to be that the teams will be highly satisfied with the most important team-level success factors. Figure 5.2 presents the gap analysis, mapping the 13 identified success factors by their importance against how satisfied the teams were with them.

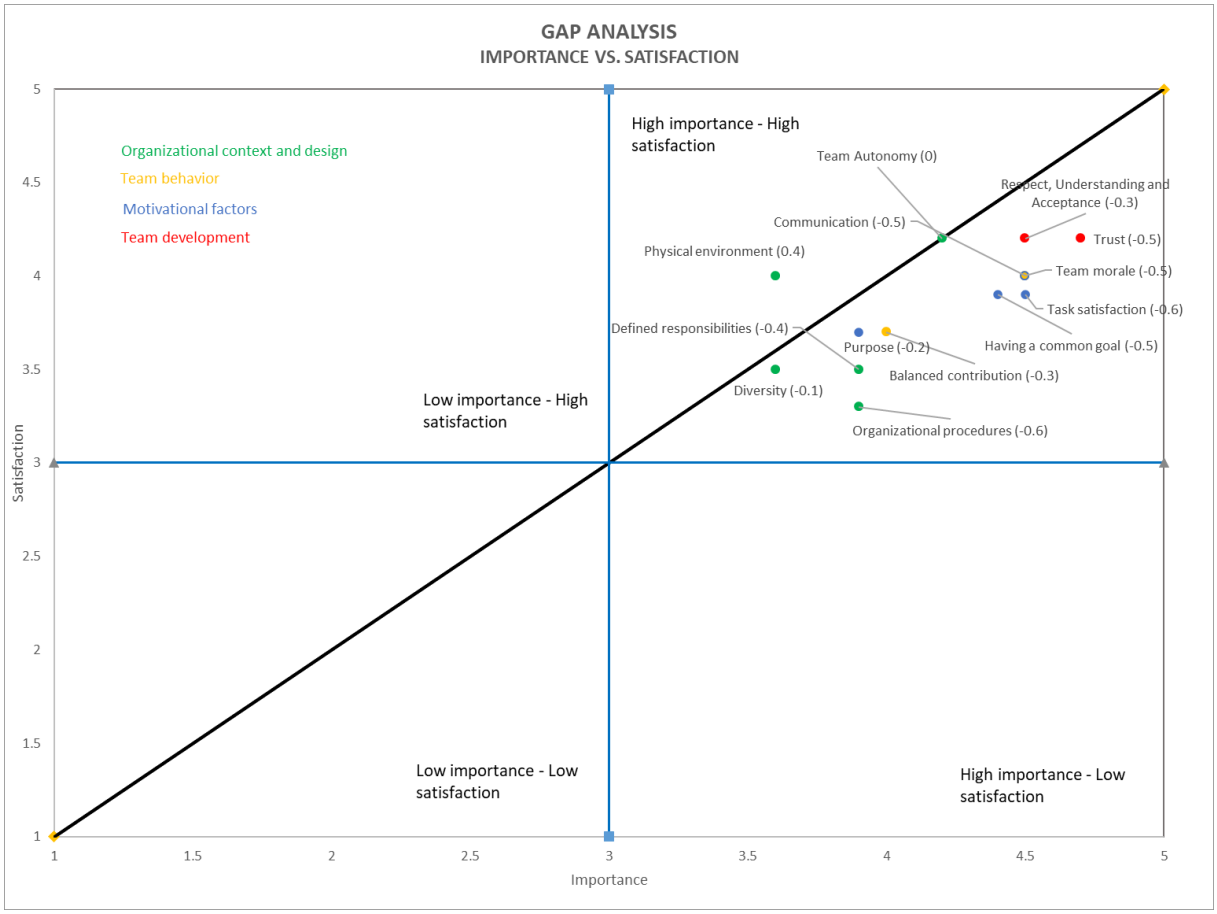

Figure 5.2: A gap analysis showing the perceived differences between importance and satisfaction

As Figure 5.2 shows, all identified success factors fell in the quadrant of high importance – high satisfaction. This indicates that Zenseact employees are highly satisfied with the success factors they consider important. However, the researchers argue that a deeper analysis of the success factors is valuable, as it suggests which factors should be stimulated in a first line of action. Therefore, it was decided to look at the scale from three to five, and Figure 5.3 presents this analysis. With that being stated, the researchers should emphasize what has been presented in section 5.2: that the success factors are not independent of each other and may thus not be

treated in isolation. In addition, actions aimed to improve satisfaction in one factor are believed to be likely to affect other factors.

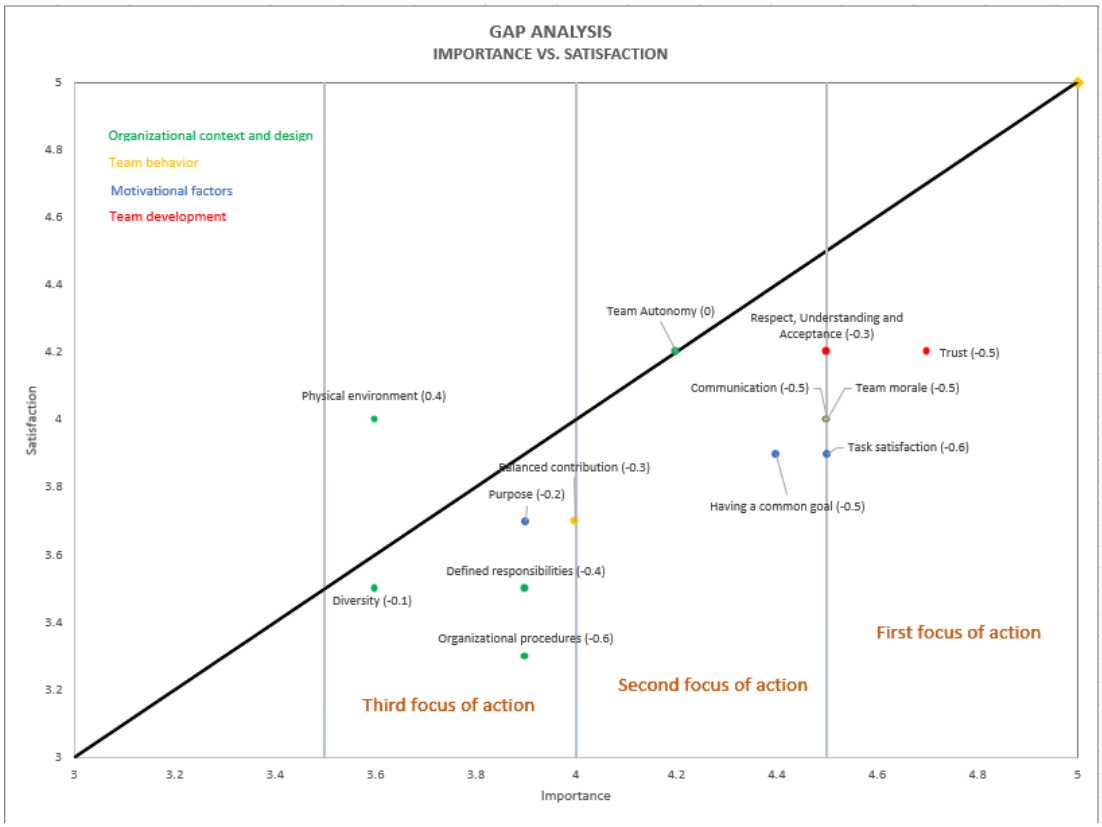

Figure 5.3: The gap analysis, showing action focus groups.

As is presented in Figure 5.3, all success factors but two, physical environment and team autonomy, fall below the line. Furthermore, the factors below the line have a negative gap between how important they were rated and how satisfied the teams were with them. Consequently, there is an opportunity for Zenseact to act towards increasing their satisfaction.

Understandably, companies might not have the capacity to increase the satisfaction of all the success factors simultaneously. Thus, the factors were grouped based on their importance. The first line of action should be taken toward the most important success factors, as they are deemed the most elemental for the teams' success. Figure 5.3 exhibits the action groups and how the success factors are divided into them. Factors that fall on the drawn action lines splitting the categories will be grouped with the category with the more urgent action stage.

First focus of action

The success factors that fell into the first focus of action group were task satisfaction, team morale, communication, trust, and RUA. Interestingly, trust and RUA which are occupying the Team development category in the framework fall into this group, indicating that Team development is perceived as the framework's most important and highest satisfaction category. In addition, communication, which has been argued as a stimulator for team development (Dickinson & McIntyre, 1997; Dingsøyr et al., 2016), likewise resides in this action group, along with the Motivating factors team morale and task satisfaction. Team morale is tightly linked to Dingsøyr et al. (2016) and Sundstrom et al.'s (1990) notion of cohesion, which was also stated as a Team development factor in the conceptual framework.

Another intriguing aspect is that all success factors in this category, except for task satisfaction, relate to psychological safety (Edmondson, 1999) and can be seen as contributors to reaching that state. Thus, actions aimed at stimulating the psychological safety of the workplace may be argued to enhance the satisfaction of multiple factors in this action group.

As this category is perceived as highly important, the researchers suggest companies to aim their actions at improving the teams' satisfaction within this category. In Zenseact's case that would accordingly be the the factors elaborated on in this section. However, to ensure that the right actions are taken, further research should be conducted to understand what is needed to raise the satisfaction of these success factors.

Second focus of action

The success factors occupying the second focus of action group were having a common goal and balanced contribution. In addition, team autonomy fell right on the line, indicating that the teams are equally satisfied with it as it is important. This raises an interesting question of how much autonomy the teams desire and if they desire to be fully autonomous. This is in line with what the researchers observed about team autonomy: the teams seem to have the authority to be autonomous, but they are not fully exploiting that authority. Furthermore, the factors in this action group do not share a clear theme, as the ones in the previous. Having a common goal is put in the Motivation bracket, balanced contribution in Team behavior, and team autonomy in Organizational context and design. Although the relationships and dynamics between the different success factors is complex, it is not evident that there is one cause of action that may impact all of these factors simultaneously. Nevertheless, balanced contribution is related to workload sharing, helping attitude (Campion et al., 1993), exploiting every member's expertise, and establishing norms regarding effort and prioritization (Hoegl & Gemuenden, 2001) described in literature. These could further be seen as factors that likewise would facilitate a team's self-management and ergo its autonomy. Accordingly, actions aimed at one these success factors may also enhance the other.

Third focus of action

The success factors in this action group were organizational procedures, defined responsibilities, purpose, and diversity. Interestingly, the factors that occupy the first category of the conceptual framework, Organizational context and design, are dominant in this action group. The only one placed in a different framework category is purpose, which was placed in the Motivation category. The prevalence of context- and design factors may indicate that the teams generally do not conceive them as equally important as factors from other categories. One reason might be that they could be perceived as self-evident or taken for granted by the employees, which was discussed in 5.2. Another reason for their low rating could be that team members are typically not the ones responsible for stimulating them, which was also elaborated on in 5.2. Nevertheless, the factors are still considered important and should not be neglected. There can also be argued to exist certain relationships between the factors in this action group and factors in others (e.g., purpose and having a common goal, and diversity and RUA), and between organizational procedures and defined responsibilities which was elaborated on previously. Accordingly, actions towards a relating factor to the ones in this action group may enhance these as well. As with the other two action groups, future research is needed. However, this group should have the lowest importance of all the action groups.

Success factors outside of action focus groups

Physical environment was the only success factor galling above the line of action, indicating that the teams are overly satisfied with it. Therefore, physical environment is not placed into a

specific action focus. However, it should be emphasized that this analysis is done in the high importance - high satisfaction quadrant. Therefore, the physical environment should not be disregarded as unimportant, e.g., Sundstrom et al. (1990) and Wageman (1997) both regard the physical environment as an important team-level success factor. Hence, Zenseact should continue with what they are doing to withhold the satisfaction of the physical environment.

6 Conclusions and recommendations

The following final chapter concludes the answers to the three research questions the researchers set out to answer. Furthermore, the limitations of this research are presented with suggestions for future research. Lastly this chapter presents implications for practitioners.

6.1 Conclusions

This thesis has aimed to investigate team-level success factors in agile organizations, through a case study of Zenseact. More concretely, a round of interviews was conducted to address team members' definition of success, and to answer RQ1 and RQ2:

RQ1: What are the team-level success factors in self-managing agile teams?

The data collection concluded that success at Zenseact is largely considered a term with a two-part meaning; it is seen as both the triumphant completion of projects, and employee well-being and satisfaction. Furthermore, fifteen different team-level success factors were presented by the Zenseact employees: *Trust, Communication, Respect, understanding, and acceptance (RUA), Task satisfaction, Team morale, Having a common goal, Team autonomy, Balanced contribution, Defined responsibilities, Organizational procedures, Purpose, Diversity, Physical environment, Leadership,* and *Competent team members.* The identified success factors are generally aligned with the success factors brought up in literature. The most notable similarity is the importance of psychological safety and communication, which was emphasized in both literature and in the data collection. On the contrary, task satisfaction and team morale, which were highly rated as success factors by Zenseact employees, received little concrete support from theory.

The interviews also aimed to answer RQ2:

RQ2: What method(s) can be used to measure the employees' perception of these success factors?

As the success factors have an intangible and subjective nature, they are complicated to measure. Nevertheless, this research has suggested a measurement tool which treats team members' satisfaction with team-level success factors. By recurrently examining employees' perception of importance of the success factors, and their satisfaction with them and looking at the direction of change rather than the absolute numbers, an indication of how well the company is doing may be obtained. As the ratings are mainly subjective and may vary depending on the context, the direction of change is considered a more accurate measuring unit than absolute values. Further, by adding supplementary and voluntary open questions, the organization allows for new success factors to be considered. Potentially, this could further be combined with measures of more strict output-related measures of team performance, such as produced lines of code, or tickets completed. However, this is something that is yet to be tested in practice and is thus an avenue for future studies.

A survey was then sent out to Zenseact team members, to support and test the findings in the interviews. These methods were further complimented by observations of teams in action, and by company artifacts received from Zenseact.

Moreover, the survey likewise sought to answer RQ3:

Which team-level success factors do employees regard as most important?

The results displayed that the five foremost significant success factors are: *Trust, Communication, Respect, understanding, and acceptance*, *Task satisfaction,* and *Team morale*. The remaining ten success factors' ranking follows the same order as they are presented above. However, the difference in importance rating between success factors is not large, making it difficult to be too confident about the success factors' order of significance.

This research supports the current array of literature treating teams and team-level success factors. As mentioned, the team-level success factors identified in this study are largely aligned with existing literature, but this research makes an additional contribution by determining an order of importance and a proposal for how these intangible factors can be measured. Major learnings from this study are that the strict interpersonal success factors (e.g., trust, communication, and RUA) are considered the foremost important for a team's success. This brings additional understanding to the field, as these factors have been presented as important for a team's success, however, no regards have been given to their order of significance.

6.2 Limitations and future research

Even though this research provided answers to the stated research questions, the researchers should address the study's limitations. First, according to the research design, this research is based on a case study from a single agile organization. Zenseact is in a partly unique position; with the company's ownership situation, it is not constrained by financial requirements of profits in the same manner as other organizations in the industry. Zenseact's atypical position may also explain the prominence of process- and behavior success factors over output-related factors. Thus, the results of this study may be difficult to generalize outside Zenseact's specific context. This allows for interesting future research opportunities with a similar study being conducted at an organization in a producing state. Potentially, such a study could make comparisons to the findings of this study, increasing the overall understanding of team-level success in agile organizations.

Second, as this research is done through the lens of the team-level perspective, it understates other levels of abstraction relevant for team-level success; for example, the individual traits desired for teams to satisfy the identified success factors. Team members' individual characteristics can be argued to facilitate or circumscribe a team's opportunities to reach the identified team-level success factors. Several of the identified success factors can also be argued to stem from, and be in play, at the individual level. For example, RUA, communication, and leadership are all traits that can be argued to be distinguishable for an individual, which is not something considered in this study. Moreover, cross-team collaboration and interactions were something noticed as determinants of Zenseact teams' success. How a team manages its interfaces with other teams and the rest of the external organization, and what factors are impacting the success in that aspect, was not treated in this report, but is nevertheless arguably a determinant of the success of the organization. Further, the organizational characteristics impacting a team's ability to be successful was partly treated in this study. However, more macro-level circumstances such as which industries and countries the organization is operating in, the size of the organization, and for how long it has existed were not included, although they may also affect the teams' performance. Consequentially, the three different levels of

abstraction described in this paragraph – individual level, inter-team level, and the organizational level – pose intriguing opportunities for further research to increase the overall understanding of team success.

Third, the empirical findings are drawn from a limited number of interviews conducted solely within one ART due to time constraints. Although the chosen individuals provided the researchers with similar success factors and definitions of success, a broader interview sample may have added supplemental dimensions and ideas. Ultimately a survey with a different layout than the one sent out may have been generated. It should further be emphasized that the results of this research are applicable in the moment and situation the research is conducted in, as it treats intangible factors that can be affected by change over time. A similar study conducted over a more comprehensive period of time, with time devoted to several rounds of interviews, might yield data revealing alternative results or alter the order of the identified success factors. This provides an opening for a similar study conducted over an extended period. Such a study would likely either strengthen or belittle the conclusions of this master thesis and further raise the overall comprehension of team-level success factors.

Moreover, the researchers' ability to withdraw data from the survey was limited due to access complications with the software, &Frankly, and its non-academic design. Although the survey data yielded robust indications on the relative importance of the team-level success factors, the data access granted did not allow the researchers to conduct more detailed statistical analyses. For instance, conducting a correlational analysis on this or similar datasets presents a promising avenue for further research. Correlation analyses may also be conducted to explore the relationships between the different categories of the conceptual framework. Moreover, the &Frankly software did not allow for randomization of questions, which may have impacted the results by respondents e.g., answering the first questions more thoroughly, leaving the rating of the latter presented success factors considered with less detail. Likewise, it was not possible to generate purely explanatory text cards for providing instructions to the respondents, which may have confused parts of the survey sample.

This study further presents a tool for measuring the identified team-level success factors. However, how this tool relates to more output-related KPIs, such as produced line of code and delivery time, is not concluded. Although it is believed that teams exhibiting high values of satisfaction with the team-level success factors will also display competitive output-related numbers, this has not been tested. Therefore, an interesting subject for further research is to investigate the relationship between these and their eventual correlation.

Furthermore, as was noted during this research, possessing the authority to make decisions does not equal that a team will be autonomous. This somewhat counter existing literature, which often implies that a team has an inherent will to be autonomous and that provided with decision-making authority, it will self-manage rather effortlessly. This paves the way for future studies concerning what circumstances and factors are required for a team to triumphally be autonomous. Similarly, the levels of communication observed did not match the researchers' interpretation of the level required for the high rating of satisfaction communication received. This may indicate that the findings from the interviews and the survey may be conflicting with what is naturally occurring. Thus, further studies regarding eventual misalignment between findings in a natural environment (e.g., observations) versus in more artificial environments (e.g., interviews) would be beneficial.

Moreover, as Zenseact's teams are using different agile methodologies and the sample of the data collection included several teams, it was not possible to delineate if the team-level success factors differ between them, or if some success factors are rated more important by teams employing a specific agile methodology. Hence, this also suggests a possible opportunity for further research on a similar dataset that was obtained from this research's survey. Other avenues of further research arise from the identified success factors. Having a balanced contribution, task satisfaction, and team morale were ranked as highly important, but the level of satisfaction was among the lowest for the success factors. Subsequently, how to improve the satisfaction of these factors is an interesting topic for a future study.

6.3 Implications for practitioners

Despite the discussed limitations, the researchers still argue that this research has valuable implications for individuals in leadership positions and within HR departments. As elaborated on in 6.2, the implications are mainly relevant for companies in a similar context as Zenseact but are also thought to be applicable to companies in other industries and with different ownership structures, as long as they are dividing the labor into SMTs.

Firstly, the focus of this research is on the team-level. However, the researchers' firm belief is that the individual traits should not be belittled, which was discussed in 6.2, as the team is ultimately a collection of individuals working jointly towards the same goal. Thus, employees responsible for recruiting new personnel may benefit from taking the team-level success factors identified here into account when evaluating potential new employees. Several of the success factors are believed to be possible to learn, but it seems to be more fitting hiring individuals already possessing, e.g., proficient communication skills, leadership skills, and who are respectful and accepting towards their peers. This ought to ease the process of reaching the desired team-level success factors.

A second implication is that the researchers witnessed a gap between what the teams stated as important success factors and how the teams behaved. Communication can be named in that context. It was ranked as the second most important success factor as well as a predecessor to developing trust and the desired psychological safety within the teams. In addition, employees were also satisfied with communication within their teams. However, during the observations, the communication was not up to a level that the researchers would deem sufficient for the state of psychological safety. Therefore, practitioners should aim to educate employees about the need for honest communication to reach a state of psychological safety. However, it should be noted that communication alone will not be sufficient, as the other success factors need to be stimulated as well.

Thirdly, the researchers advise companies to provide a survey, like the one used for this study, to their employees once every six months to establish a foundation of understanding of their teams' current perception of importance, and the satisfaction level of the team-level success factors. Additional factors of relevance to a particular practitioner can readily be added to the survey, e.g., by adding an open-text question to the survey. What is of foremost value is that importance and satisfaction should both be measured. By doing this recurrently, it will act as a tool for measuring the current satisfaction levels and allow companies to target certain areas with improvement actions. Hence, their teams' journey towards reaching a Team development state will be facilitated.

In the case of Zenseact, they are suggested to primarily aim actions of improving the satisfaction of the success factors in the first action focus group. This includes RUA, trust, communication, team morale, and task satisfaction. Although, these factors are at a high level of satisfaction, this level must be maintained and thus the company ought to keep stimulating these factors. One tangible action which may lead to the nurturing of several success factors is to put more emphasis on the 4Ps, the teams' established process for guiding their work. As has been discussed, the 4Ps as of today are not thoroughly exploited, but the process of establishing and continuously refining and conforming to them occupies substantial potential for improving the success factors. Fully functional and dynamic 4Ps may establish a clear purpose for the team, as well as inspire how the teams interact, and their roles and responsibilities. There is likely work to be done making all employees see the value of well-defined 4Ps, and this is something leaders within the organization concurrently should work with.

The final implication relates to the limitation of the results of this research being applicable to the timing of the research and its context. In this regard, leaders and HR employees are advised to not see this research as a blueprint for creating successful teams, rather it should be seen as a baseline or guidance for how they can define and foster team-level success factors in their teams.

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Appendix A

The survey

Figure A1 shows the survey used for this research. The questions are presented in the order they were asked.

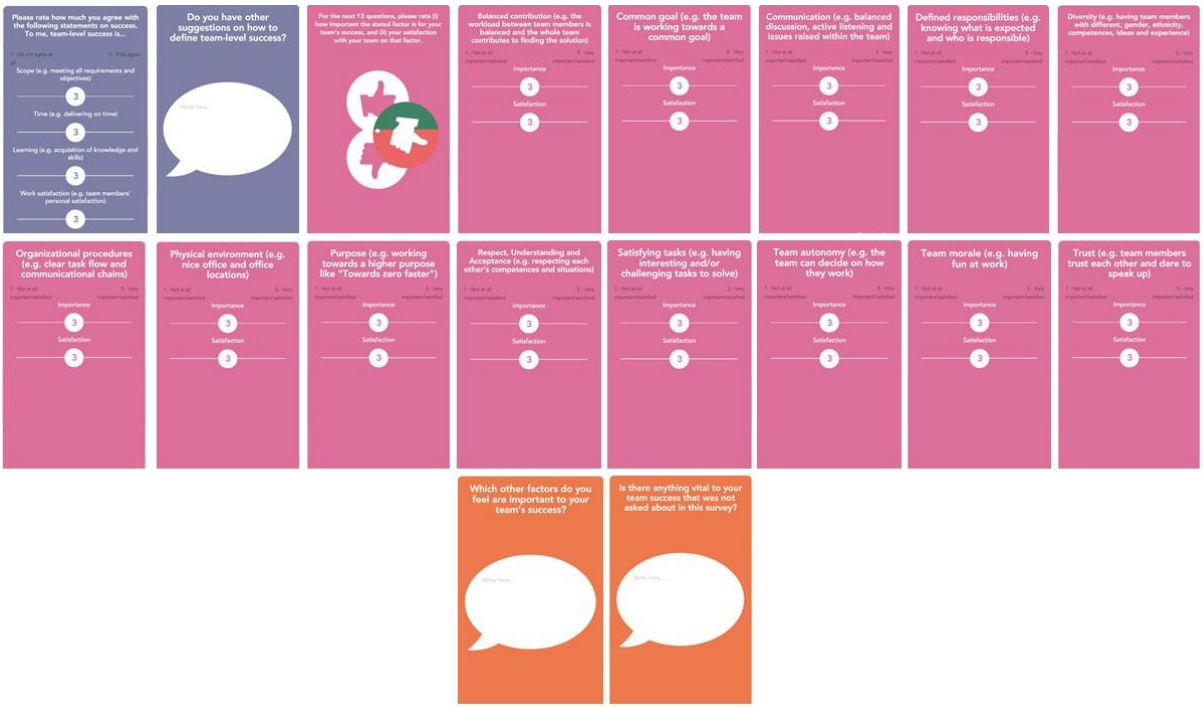

Figure A1: Screenshots from &Frankly showing the questions composing the survey.

Appendix B

The miro boards

Following are screenshots from miro, Figure B1 shows the miro board for success factors identified in theory, and figure B1 shows the miro board used to synthesize data from interviews.

Figure B1: The miro board used to synthesize the success factors found in previous theory.

Figure B2: The miro board used to synthesize the interview data and discover themes.

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