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# Long-term Agile Success for Startups and Entrepreneurship

Master's thesis in Computer science and engineering

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Department of Computer Science and Engineering  
CHALMERS UNIVERSITY OF TECHNOLOGY  
UNIVERSITY OF GOTHENBURG  
Gothenburg, Sweden 2024



MASTER'S THESIS 2024

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Master's Thesis 2024

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Typeset in L<sup>A</sup>T<sub>E</sub>X  
Gothenburg, Sweden 2024

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### **Abstract**

The principles of continuous improvement, adaptability, innovation and customer focus are crucial elements for long-term success of many new companies. However, the implementation and adoption of agile methodologies can help to eliminate complex organizational issues and unclear ambiguity in many industries. This study investigates the adaptability, adoption and applicability of agile methodologies in relation to the long-term agile success of startups and entrepreneurship. These agile methodology principles are studied from the context of startups companies. With the use of startups as our case study with qualitative interviews, the research presents insight into challenges that arise within the context of startups and entrepreneurship and how agile methodology can be adapted and applied to overcome them. Our thesis findings revealed the need for the adoption of agile methodologies by startups and entrepreneurship as a way of achieving long-term success. The topic has provided guidelines which are also validated with specific recommendations for startups. This paper offers practical guidance for achieving long-term agile success by startups and entrepreneurship and it will also contribute to the understanding of agile practices and will emphasize the importance of agile methods for startup companies.

Keywords: Agile methodology, Agile leadership, Startup and Entrepreneurship



# Acknowledgements

We would like to express our sincere gratitude to our supervisor, Muhammad Hanif for his guidance and support throughout our Master thesis. His constructive feedback and insight and constant encouragement has been highly instrumental in shaping this thesis.

We also like to express our appreciation to our examiner Birgit Penzerstadler for her unwavering commitment to excellence. You have guided us in fostering collaboration and innovation even with other students within your group.

Our sincere appreciation also goes to the founders and staff of all the startup companies we engaged for an interview and to every participant that filled our questionnaire.

Thank you all for being a part of our personal and academic growth.

Damilola Adebola Olurotimi-Odu & Petra Nisan, Gothenburg, June 2024



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# 1

## Introduction

Agile methodology is a people-focused, results-focused approach to software development that considers our rapidly changing world. It's centered around adaptive planning, self-organization, and short delivery times. It's flexible, fast, and aims for continuous improvements in quality, using tools like Scrum and Extreme Programming [1]. Agile methodology is a crucial element for project development, especially software development and it has proven successful in many large companies [2]. Most established companies are also confronted with high-frequent changes due to innovations and new technology [3]. One paramount concern for startups and entrepreneurs is the ability to quickly innovate, adapt to changing market demands, and how to manage uncertainties effectively. Startups must improve their capacity to proactively deal with uncertain events because of increasing unpredictability in the present business environment [4].

One way to keep pace which is also a promising solution is the agile software development methods. Part of the motivation for this thesis is that while several papers and research exist on agile adoption in several industries [5], however, very limited research exists regarding long-term agile success for startups and entrepreneurs. This research motivation is based on adding more knowledge to the topic of long-term agile success for startups and entrepreneurial ventures. The motivation is also based on answering the question regarding the primary challenges that startups and entrepreneurial ventures have when considering long-term agile success since startups must improve their capacity to deal with uncertain events and unpredictability in the present business environment.

Agile principles and practices provide a framework for flexible project management and iterative development, emphasizing collaboration, customer feedback, and continuous improvement. This approach, which begins in the realm of software development, gradually permeates into various industries, and now finds its most natural and promising home within the dynamic world of startups and entrepreneurship. According to Mkpojiogu et al's study, startups adopting agile usually are into web-related content and software development [5]. The agile development experience of these startups is as follows: 1-2 years (30.3%), 3-5 years (23.7%), and less than one year (18.4%). Startups with more than 5 years of agile experience are 3.9% and those not practicing agile are 23.7% [5].

We aim to provide a comprehensive understanding of how agile methodologies can be leveraged as a powerful tool for startups and entrepreneurs to navigate the dy-

dynamic challenges of their unique business landscapes while maintaining and sustaining long-term success. This research topic is centered on analyzing and investigating the detailed dynamics of long-term agile success for startups and entrepreneurship. The research will look into certain agile principles and practices that startups would utilize for consistent improvement and long-term growth over time. Part of the objective of this thesis is to guide and uncover the immediate benefits of agile practices and the role of agile in promoting and fostering long-term success for startups and entrepreneurship in the startup network. Another objective is to narrow the gap and bridge possible existing gaps in information between agile principles and practices and the long-term success of startups and entrepreneurship.

This thesis project considers the following as startup classification:

- Number of founders is between two to five persons
- Age of company is considered to be between 0 - 2 years from the date the company was registered
- Annual revenue before tax is between 0kr - 200,000kr
- Long-term is considered as any company that has been in operation for 5 years

### 1.1 Research Questions

This study aims to address and answer the following three research questions:

**RQ1:** *What are the primary challenges encountered by startups and entrepreneurs in achieving long-term success?*

This is an investigation into the challenges to examine how startups and entrepreneurs can contribute to achieving long-term success. We perform this verification step to assert that startups encounter challenges that affect their long-term success.

**RQ2:** *How can agile methodologies be effectively adapted in startups and entrepreneurial ventures to achieve long-term success and growth?*

This is an investigation into how agile practices can be adapted in startups. This seeks to provide comprehensive insights into different development processes and how agile practices can be effectively adapted.

**RQ3:** *What are the roles of organizational culture and leadership in startups and interplay in long-term agile success?*

Our goal is to explore how both organizational culture and leadership can be improved by adapting agile practices and roles to achieve long-term success.

## 1.2 Delimitations

This study is delimited to examine only a certain number of startups and their development process and challenges. While a more comprehensive analysis of other startups and companies could offer valuable insights, this research aims to gain a deep understanding and comprehend the underlying causes of these startups. Furthermore, the scope is delimited to avoid exploring whether any existing agile frameworks would be more suitable than others for the startups under study. Instead, it focuses on high-level agile practices and leadership concepts and their application and adaptation to specific startup contexts. While some findings and guidelines may align with a predefined framework, the study primarily examines the balance of practices and values rather than the suitability of any particular framework.



# 2

## Related work

This chapter presents an overview of related work concerning the research objectives and the subjects under study. The fundamentals of agile methodology are described as well as agile practices and success factors for agile success. Agile leaderships are also explained by presenting previous research on self-organizing teams and team maturity. To gain a deeper understanding of specific factors and the contexts of the study, organizational changes and culture and the concept of startups are also covered.

### 2.1 Agile methodology

Agile software development is an iterative approach with small and frequent releases, and regular consultation with customers [6]. The initial goal of agile methods was to assist software development organizations to quickly develop, and change their products and services in such a way that it can adapt to changing market forces [7]. Yau and Murphy describe agile development as a process that enhances the agility of the development team, reducing time and costs when adapting to new changes [8]. Martin states that if projects are to succeed, we need to build collaborative and self-organizing teams [9].

The Agile Manifesto document outlines the four main values and principles of the agile software development methodology which is the following [10]:

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

There are different methods for implementing the Agile Manifesto, including Scrum [11], XP (Extreme programming) [12], Lean software development [13], FDD (Feature-driven development) [14], DSDM (dynamic software development method) [15], and Crystal methodologies [16]. Scrum is one of the most popular frameworks for management processes used for agile approaches. According to this framework, the Scrum team has various responsibilities, divided into sprints, each lasting two to

four weeks. The Scrum Master is the agile leader responsible for overseeing and ensuring that the team adheres to the Scrum rules in practice [11]. Schwaber describes the importance of the Scrum methodology as the optimal problem-solving approach when dealing with a market economy that undergoes constant changes and technology that is continually evolving [17]. However, empirical findings on the leadership role are controversial, and our understanding of how leadership evolves within the self-organizing team remains limited. Kalliamvakou et al.'s study of Microsoft managers states that “we still don't know what to look for in a great software engineering manager, and how to further develop their skills to support the teams they manage” [18].

Over recent decades, while market forces, systems requirements, implementation technology, and project staff were changing at a steadily increasing rate, a different development style showed its advantages over the traditional one. This agile style of development directly addresses the problems of rapid change [19]. A significant factor in agile development for startups is that the team is more effective in responding to change so far, and the team/company can to some large extent have reduced cost of information exchange together with reduced time in decision making. To reduce the cost of information exchange, the company tends to move people physically together, document exchange is replaced with people talking, etc. To reduce the time of decision-making, startups practice a user-expert approach in which the founder of the company can be trusted to make user-expert decisions [19].

Agile methods also would propose the use of “on-site customers” to replace heavy documentations which include detailed requirement specifications [6]. In the context of agile methodology for long-term success for startups and entrepreneurship, the company is expected to utilize agile principles in the company as a whole including the principles of continuous improvement and embracing adaptability. Startups and Entrepreneurs should build a culture that fosters long-term agility. The eco-system created by these startups should be able to take risks, have proactive decision-making, and ability to recover fast from failure, this is because uncertainty may arise and startups and entrepreneurs should be prepared to navigate the seasons. Agile methodology requires startups together with the people associated with the startups, to be responsive [19]. Agile development could have different effects and impacts on a startup [8].

## 2.2 Agile practices and their effects

Agile software development comprises various practices that vary depending on the specific agile framework being followed. The adoption of agile practices, when moving from Traditional system development will likely introduce several challenges [20]. While agile practices are widely embraced in software development; some argue that traditional approaches like object-oriented or lifecycle-based development might be more appropriate for certain projects or organizations. Boehm underscores the importance of both agile and plan-driven methods in projects where a hybrid approach that combines these two fits their situation [7]. The author believes that “we will

see agile methods used increasingly for projects such as financial services; electronic commerce; air traffic control; and distributed, mobile, semi-automated, network-centric military or medical systems” [7].

The motivation for adopting agile practices, particularly concerning startups, includes the ability to handle changing priorities, accelerate product delivery, and increase team effectiveness. Mkpojiogu et al. conducted a study and found that practices related to team collaboration, such as maintaining a prioritized backlog, utilizing open work areas, and employing task boards, are the most widely used [5]. Souza et al. state that startups mainly adopt sustainable and repeatable agile practices that aid in accelerating product delivery for a fast-growing market [21].

Tripp and Armstrong highlight the importance of adopting a customized approach to implementing various agile practices that suit the unique needs of different companies [22]. They point out that it is important to understand how to tailor the adoption of agile methodologies and the agile practices being employed. The authors recommend that to expand adoption, companies should prioritize the most pressing problems and urgent demands for agile work-ways. Moreover, they propose that companies should identify the performance metrics they intend to use for evaluating the effectiveness of their agile method. Based on Tripp and Armstrong’s research, the adoption of several agile principles can increase performance [22]. However, with an increasing adoption of agile practices, performance may be reduced due to their interactions. Consequently, they recommend organizations and companies to be cautious when determining which practices to implement.

Zielske et al. state that through their research, they have concluded that in newly established startups, agile methods are primarily employed to discover product ideas and create additional customer value [23]. Conversely, more mature startups are progressively adopting agile methods to organize internal processes, and deal with cultural challenges within the organization, and address employees’ fear of change.

## 2.3 Agile leadership roles and functions

Leadership in agile companies prioritizes collaboration over command-and-control management [19]. The focus is on collectively sharing information for informed decision-making, acknowledging that the key to agility lies in trusting individuals to apply their competence effectively. Instead of emphasizing who makes decisions, the emphasis is on fostering a collaborative environment that values and leverages the skills of each team member. Cockburn and Highsmith claim that this approach ultimately leads to overall team success in navigating the fast-changing market [19]. In addition, Schwaber states that agile leaders should shield their teams from unrealistic customer demands to ensure efficiency [17]. This involves fostering open dialogue between the team and customers, setting realistic project timelines and goals, and advocating for the team’s needs when negotiating with stakeholders.

The agile leadership roles outlined in the Scrum framework are the Scrum master,

Product owner, and the team [17]. The success of the project is the responsibility of the Scrum master, who enhances the probability of success through collaborative selection of the most valuable items from the product backlog together with the Product owner and by assisting the team in transforming the backlog into functional features [17]. The Scrum master's role should focus on assisting rather than organizing or controlling the teams. The Scrum master consistently strives to mitigate product risk by incrementally delivering features, continuously monitoring the progress of backlog item deliveries, and addressing development challenges rapidly [24]. The Product Owner's role is to establish and prioritize the backlog, along with addressing impediments [17]. Fundamentally, they need to determine the tasks to be undertaken based on the amount of functionality delivered in each sprint. The team is responsible for delivering value to the Product Owner and stakeholders iteratively and incrementally. In Scrum, the team functions as a self-organizing and cross-functional group; hence, they are responsible for the planning and implementation of their work, although the Scrum master may provide guidance and advice [17].

Gandomani et al. raised the question if there is a role for a project manager in agile methodologies, and if there is a need for the project manager in agile projects [25]. The authors point out that in agile leadership, there is no specific role known as a project manager. Despite the absence of this role, the research indicates a persistent demand for project management functions in agile projects. If a project manager role were to be introduced, it would differ structurally from traditional project manager responsibilities and tasks. The research sheds light on an interesting dynamic in software teams without a project manager, revealing that various agile roles often step in to handle project manager responsibilities. In Scrum, responsibilities are distributed among team members to ensure effective project management without a rigidly defined project manager role.

According to Moe et al. research, they found that the Scrum master and Product owner initially reduced team leadership by controlling the team and neglecting their concerns [26]. This reduction in leadership was observed in the interactions among the three Scrum roles: Scrum master, product owner, and team member. However, as the team matured, team leadership showed improvement over time. The authors emphasized that for teams to achieve self-organization, they require support and resources from management. They concluded that in the context of agile practices, which predominantly rely on teamwork, the significance of well-functioning teams is heightened.

Spiegler et al. state that there is still uncertainty regarding the way leadership develops in a team inherently characterized by self-organization [27]. The authors discovered that there is a leadership gap in the Scrum master role since developers can take the lead. The Scrum Master fosters a leadership gap by creating a non-hierarchical environment, allowing developers to assume leadership responsibilities. This space facilitates the dynamic distribution of leadership roles based on the team's needs in different situations. Balancing between fulfilling diverse leadership roles and enabling other team members to take on such responsibilities is essential for the

Scrum Master.

## 2.4 Organizational changes and culture

Organizational culture has a significant impact on an organization's effectiveness and overall performance [28]. The strength of an organizational culture has a direct and significant influence on the attitudes and behaviors exhibited by both leaders and employees within organizations. In essence, a strong organizational culture has a more profound impact on shaping how individuals think and act within the organization [29].

Abdul Rashid et al. state that organizational changes pose a significant challenge for many organizations [30]. The process of change is unique in each organization, influenced by factors such as the organization's nature, business type, work culture, values, management, and leadership style, as well as the behavior and attitude of the employees. It emphasizes that people's reactions to change vary; some may find it satisfying and advantageous, while others may experience pain, stress, and disadvantages.

Bakker states that engaged workers perform better than non-engaged workers because they actively adjust their work environment to sustain engagement [31]. Based on his research, he presents the following reasons why engaged workers perform better:

1. They experience positive emotions, including gratitude, joy, and enthusiasm.
2. They experience better psychological and physical health.
3. They create their own job and personal resources.
4. They transfer their engagement to others.

Moreover, according to research from Deloitte University Press, culture, and engagement rank as one of the foremost challenges for organizations [32]. A significant 87% identify culture and engagement as one of their most important issues, with half of these organizations deeming the problem 'very important' [32].

## 2.5 Factors that are important for agile success

There exists a relationship between team maturity, as defined in group psychology, and agility. According to Gren et al., teams that demonstrate both high levels of agility and maturity are distinguished by their strong commitment to teamwork, open communication, effective results delivery, and a capacity for agile planning [33]. Solving group issues is highlighted as a key success factor when building teams, implying that addressing and resolving challenges within the team context contributes

to overall success. Participants in the study mentioned team spirit as a significant factor contributing to an increase in satisfaction. This suggests that a positive team dynamic, characterized by collaboration and shared spirit, is associated with higher satisfaction levels among team members.

Startup companies possess significant potential to enhance innovation and competitiveness in national economies. Their unique capabilities enable them to offer highly efficient and adaptable solutions to both current and evolving market demands. To measure the competitive potential of startups, it is crucial not only to recognize their characteristic features but, more importantly, to identify the key success factors that contribute to their development [34]. According to the study conducted by Skawińska and Zalewski on startups in the European Union, they identify eight types of competitive advantages defined as success factors [34]. These include innovation, entrepreneurship, resources, competence, intellectual capital, sustainable development, content management, and information advantages.

Existing literature on the success of agile implementations proposed that factors contributing to success could be categorized into five groups: Organizational, People, Process, Technical, and Project [35]. Chow and Cao conducted a study and identified 36 critical success factors for the success of agile projects based on the perception of participants which were later categorized into the five suggested categories [35]. Some of the 36 critical success factors include following an agile-oriented requirement management process, good customer relationships, strong executive support, etc.

Additionally, the overall success of a specific agile project is further categorized by four attributes/dimensions: quality (delivering a well-functioning product), scope (meeting all customer requirements), timeliness (delivering on time), and cost (within the estimated cost and effort) [35]. The 36 success factors were classified under these four success attributes/dimensions. Following additional steps involving hypothesis testing and reliability analysis, a list of six crucial factors, referred to as high-level factors, was formulated. These high-level factors are arranged in order of importance according to the study results [35], which are shown in Table 2.1.

<b>High-level factors</b>
Team Environment
Project Management Process
Agile Software Techniques
Customer Involvement
Delivery Strategy
Team Capability

**Table 2.1:** Overview of the six high-level factors

The first three factors were considered critical, whereas the remaining three were considered critical only in certain projects.

In a similar study conducted by Misra et al., the authors identified additional factors contributing to the success of an agile software project [36]. Success, in this context, is defined by shortened delivery schedules, heightened return on investment, enhanced capability to fulfill current customer requirements, increased adaptability to meet evolving customer needs, and improved business processes. Table 2.2 shows the identified factors.

<b>Agile success factors</b>
Customer satisfaction
Customer collaboration
Customer commitment
Decision time
Corporate culture
Control
Personal characteristics
Societal culture
Training and learning

**Table 2.2:** Overview of the identified agile success factors

A significant amount of research in software and agility has focused on software value. Although success factors and value aspects are distinct, these concepts are interconnected - what contributes value is likely to contribute to the success of a project or team.

Sreenivasan and Suresh highlight the importance of the triple-A, including agility, adaptability, and alignment, in startups since they are facing a lot of challenges in this rapidly growing market [4]. They state that “as a result, agility, adaptability, and alignment are critical for start-ups’ success”. Triple-A is crucial for reducing vulnerability in business organizations as they implement strategies to accelerate digitalization and establish the necessary infrastructure to cultivate a positive environment. In line with this perspective, the study suggests that Triple-A is vital for startups to withstand challenges, irrespective of their size or nature [4]. Gligor et al. state that the agility of startups lies in their capability to respond quickly and efficiently to adapt to the market and environment [37]. To thrive in the current unpredictable business environment, start-ups should enhance their proactive capacity in addressing uncertain events.

## 2.6 Team maturity

Ramírez-Mora and Oktaba cite Tuckman’s forming-storming-performing model to explain the group maturation process, describing the four stages that a team undergoes as they work on a project [38]. The initial stage of a workgroup, called "Forming," is characterized by feelings of anxiety and uncertainty regarding roles, de-

pendency among group members, orientation, and testing of boundaries. The second stage, called "Storming," is characterized by intra-group conflicts arising from concerns about group hierarchy, resistance to group influence, and challenges in meeting task requirements. Moving into the "Norming" stage, conflicts are addressed, and a sense of cohesion and mutual trust among group members is established, fostering an open exchange of ideas and interpretations. The final stage, "Performing," is when workgroups become teams. Structural issues have been resolved, team members share a common focus, communication is effective, and the team demonstrates increased efficiency and flexibility [38].

Based on Gren et al. study, they found that there is a relationship between a group's maturity and agile practices, in particular, iterative development and retrospective [40]. Iteration planning, a part of iterative development, showed a significant impact on a team by showing team members' activity levels in the team. In addition to retrospectives, the stand-up meetings serve as a synchronization point for team members, also correlated with group maturity. Furthermore, they acknowledge that assessing team maturity and understanding group dynamics is more crucial in agile teams compared to traditionally organized ones [40].

The impact of delegating tasks in a virtual team varies based on the team's maturity level [41]. Within mature virtual teams, the delegation of additional responsibilities can result in heightened satisfaction among team members and an overall improvement in team performance. When team leaders recognize their team's competence and delegate more responsibilities, it elevates the team's self-worth, increases motivation, and drives them to exert more effort and dedication in their work. However, in an immature virtual team, increased delegation may have adverse effects, contributing to diminished satisfaction among team members and a decline in overall team performance. Consequently, team leaders should be aware of the team's maturity level and tailor the delegation of responsibilities accordingly.

Gren and Lindman state that mature teams fully embrace the agile practices they find beneficial, whereas less mature teams require additional reinforcement of these practices; otherwise, they exhibit reluctance to incorporate them [39]. The authors cited one interviewee who mentioned that "more mature teams can easily change their process if asked, which is not something the less mature teams could do in the same way".

## 2.7 Self-organizing teams

Agile teams are known for their ability to self-organize, indicating that they internally manage their work and structure themselves around tasks [17, 35, 19]. Self-managing teams are increasingly becoming the preferred management practice for organizations seeking to boost flexibility, decentralize decision-making, and fully maximize the creative capacities and motivation of their employees [42]. Well-defined goals and objectives are key factors when establishing successful self-managing teams. These critical success factors, combined with a high degree of autonomy and decision-

making, are essential in today's fast-paced business environment, enhancing the team's adaptability and responsiveness to evolving circumstances. According to Wageman, establishing clear goals would enhance awareness of the direction and promote improved teamwork, as well-functioning teams typically align themselves with shared goals [42]. While self-organizing teams operate with a considerable degree of autonomy, they are not uncontrolled [43]. Management should take action to prevent instability, ambiguity, and tension from escalating into chaos. At the same time, management takes a step back, refraining from implementing the kind of rigid control that could impact the creativity and spontaneity of the team.

According to Simard and Lapalme, when teams organize themselves, they collaborate by understanding, taking responsibility, and anticipating what to expect [44]. Over time, an informal hierarchy might develop within a team, with more experienced members likely becoming decision-makers and influencing the team's dynamics. Simard and Lapalme claim that, apart from status differences, which can hinder effective teamwork and lead to problems, this form of control might also bring about such issues [44]. Status distinctions make it challenging for the team to comprehend each other, as it requires a mutual understanding of shared responsibilities. Members with less experience might not share as much information or ask as many questions when working together, complicating the collective understanding of the group.

## 2.8 The concept of Startups

By leveraging technology, startup businesses are booming and flourishing. However, comes the question of What is a startup? How can a startup be defined? [45]. Various experts have defined Startups and it appears there is no mutual agreement as to what the definition of startup should be [45]. This study with information from EBSCO database gives insight into the analysis and review of American academic journals to know startup definitions, criteria, and classifications.

In the course of this study, we have seen that the United States of America is leading in the number of published and submitted startup-related articles [45]. The definition of startup will be based on the focus that was given by authors to the innovation factor in the definition of what startup is. This is the age of discontinuity [46]. The concept of a startup is not new it has been around for a while however there are doubts and many questions not answered about what is a startup. Startups have brought about several changes and change is said to be a normal condition [46]. Should a startup be defined based on innovation? or should a startup be defined by the size of the company? Robehmed looked at the revenue differences in his concept of startups, profit margin, and the number of workers in the company [47]. He also indicated that some CEO ideas of startups were traced to innovation and achievements. Startups have brought about changes in a disconnected fashion, the change is sudden and also irreversible [48]. On the other hand, the change and the uncertainty have also brought innovation, and new opportunities for companies that can find these opportunities and take good advantage of these opportunities to

obtain a high level of economic compensation [49].

Robehmed in his article gave an interesting insight into the concept of a startup as a company that can grow and most startups are tech-based at the same time, a company does not have to be tech-oriented or tech-based to be classified or considered as a startup [47]. Furthermore, a startup company or “a startup” is a company that has a low operating history or is in its first stage of operation [50]. These companies are newly formed and are in the stage of capitalizing on their products/services and research for markets [51].

Timmons JA in his paper indicated that 23.7% of new startups usually fail in the first two years of operations while just 37.3% of those that survive the first two years will survive past their sixth year of operations [52]. This is an indication that ensuring that a company survives has always been a major challenge for management. Startups and entrepreneurial management tasks include but are not limited to generating funds for the initial startup of operations, getting trusted partners that believe in the company vision and ideas, product launch to market, etc. All these plans should be well listed in the startup’s business plan, worth mentioning that such plans need to be updated and reviewed regularly. According to Google, the number of startups in Sweden in 2018 is about 66,750 compared to 68,887 in 2017 and 71,825 in 2016 [53].

Startups normally encounter some challenges as they are new on the market and with their product. Salamzade and Kesim underscore that any startup would face some challenges in different stages for several reasons [54]. One of the challenges is the financial challenges. Initially, startups often begin with one founder or a few co-founders. As the startup progresses, the founder may require additional expertise to develop prototypes. Consequently, the founder must recruit employees and this progression is vital for success. If the founder lacks sufficient knowledge of human resource management, the startup could face failure [54].

The process of creating a new business serves as a major achievement for an entrepreneur [55]. A great number of startups are launching daily worldwide. In India, over 4000 startups were established in 2018 [55]. Entrepreneurship and startup is a buzzword in today’s policies and public debate in most countries including Sweden and promoting the creation of startups is given high priority across many countries [56]. For a country like Sweden, one of the most prioritized policies is measures relating to promoting entrepreneurship in Regional Growth Programs(RTP) [56]. The idea of entrepreneurship is used in many ways outside of its core foundation for new businesses [56]. However, in this thesis paper, we limit the concept and analysis of entrepreneurship to the form of startups only.

There have been so limited and few detailed descriptions of startups’ “non-linear developments” and the few available [46] and unfortunately, past research has devoted attention to the resources and finances of new startups. Most of the past research showed linear and status theoretical viewpoints [46]. Some examples are

the theoretical model of organizations [57], strategic model [58], and organizational stage theory or organization developmental stage startup model [59] shed little light on the dynamics, and detailed developmental processes of business startups [46].

The success of new companies is a critical factor in fostering economic growth, driving innovation, and creating job opportunities. Some Startups are known to have caused disruptions to traditional models and brought change to the business landscape [60]. Although this achievement is not free from risk and uncertainties that can if not well taken care of hinder or impede the growth of the company.

A review of startups' time, innovation, and Organizational emergence in America reveals that startups go through two processes: "product emergence" and "organization emergence" [61]. Further research also shows that most startups plan to expand internationally as a second step after company startup [62]. We will look at how companies in America compress time and shorten the startup and international network as a precondition for internationalizing quickly.

The fast and simultaneous launch of startups and innovative products in America and the entire world is a complex endeavor. There is a need to better understand innovative product development, organizational creation and development, and internationalization [61]. The scattered pieces of the puzzle are essential to the long-term success of many startups. According to Kessler and Chakrabarti, innovation speed is a measure of the time spent between idea conception and commercialization [63]. The power to speed up innovation leads to competitive advantage which invariably leads to fast decision making for startups and entrepreneurs. Speed to market will generally influence positively on new product success [64]. Although speeding up new products may impact negatively on product quality [65].

A separate review from the 2nd European Startup Monitor (ESM) [66] shows that:

- The age of the startup startups is on the average 2.4years old
- 77.7% of the ESM startups plan internationalization.
- The percentage of female startup founders is 14.8%
- Startups employ an average of twelve employees which can also include the founder
- Over 70% of the startups usually expect growth within the next year
- Startups plan to hire an average of 5 new employees within the near future



# 3

## Methods

This chapter outlines the procedures undertaken to address the research questions. Firstly, a description of the specific startups the research focuses on is provided. Then the research design and data collection are presented by describing the literature review, questionnaire, and interviews.

### 3.1 Description of the case

The research questions were addressed by examining specific startups that are founded by individuals and some co-founders respectively. The startups in this report have been used for non-disclosure reasons. Most of the startups are in the scale-up phase and many of its employees have worked on other companies before joining the startups under review. It is uncertain how many legacy practices the employee has inherited from previous assignments. While these companies have aimed to work agile, some of the companies have not fully implemented the agile framework and its practices. For one of the startups, how the team works and to what extent the organization is agile is currently unknown.

The specific department under study is referred to as “startups and entrepreneurs” and most of these startups are responsible for delivering IT services and solutions. We refer to the products from the IT services startups as “Innovative and disruptive IT services”. All entities and teams involved collectively generate funds for the company by working closely together and each performing its own responsibility.

The startups aimed to adopt a fully tailored agile framework and approach where every team will be fully cross-functional and each team together with the founding members will own the vision and road map for the company. For most of the startups, the founder serves as the line manager and is also responsible for staff welfare. The entity under review is also responsible for Marketing the company to the public, Branding and positioning the company strategically, and researching and developing to be creative and innovative and make a quick and grand entrance into the market before its competitors.

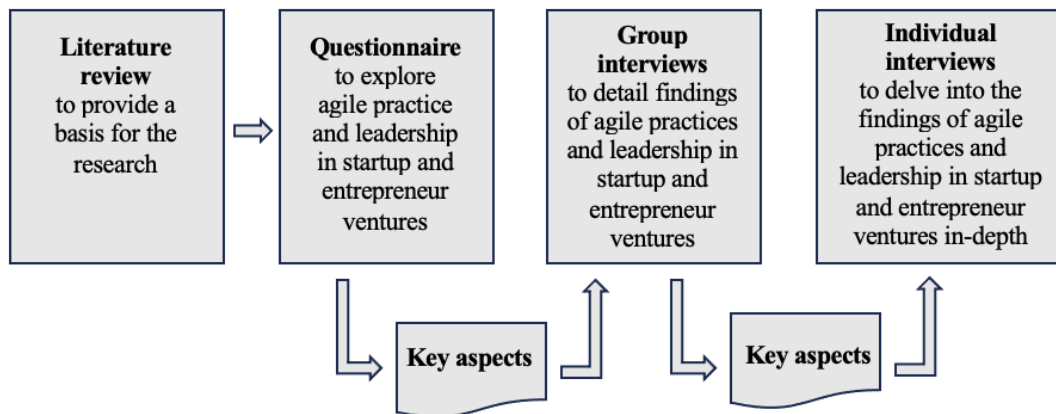
### 3.2 Research design

The research study adopted a mixed-method approach, that is to combine both qualitative and quantitative data. It seeks to complement the strengths of each

method and provide a more in-depth understanding of important determinants that contribute to long-term agile success for startups and entrepreneurs. This mixed-method approach facilitated the validation and convergence of findings from diverse data sources, thereby enhancing the reliability and validity of the study's conclusions.

Qualitative methodologies, such as interviews, were utilized to delve deeply into agile practices, organizational dynamics, and entrepreneurial strategies, fostering a comprehensive understanding of the subjective experiences, perceptions, and motivations of key stakeholders engaged in startup ventures. Quantitative methods, including surveys, were utilized to quantify and measure various dimensions of agility and success within startup environments. The questionnaire aided in gaining a broader insight into startups and their challenges to achieving long-term agile success. To identify patterns, correlations, and statistical relationships, the study examined the broader landscape of agile practices and their impact on long-term entrepreneurial outcomes.

The research design can be seen in Figure 3.1, which gives an overview of how the data were gathered.



**Figure 3.1:** Flowchart of the method stages

### 3.3 Data collection

This section will describe the chosen methods for data collection. In this study, the primary data source was gathered through questionnaires and interviews. Furthermore, a comprehensive literature review was conducted to explore existing scholarly works, theories, and empirical studies relevant to the research topic. This literature review served as a foundation for understanding the current state of knowledge in the field and identifying gaps. The data collection for the literature review will be presented in this section, followed by a detailed description of the questionnaire, and lastly, the interview guidelines.

### 3.3.1 Literature Review

A comprehensive literature review was conducted on relevant topics revolving around the research questions which rely on the agile methodology, teams, and leadership, as well as organizational change and culture. This work provided a basis for the research and established a framework for the study. Additionally, the literature review was performed to gain a deeper understanding of the subject and to better formulate the questions for the questionnaire and the interview questions used in the interviews.

To gather the necessary literature for the study, databases such as Google Scholar and the Chalmers Library were used. Additionally, snowballing was also used, where researchers identified further papers through references cited in previously identified papers. Keywords and search terms were used to find the literature relevant to the chosen topics: Agile methodology, Agile leadership, Agile teams, Agile success, Agile practices, Organizational culture and change, and Startups.

### 3.3.2 Questionnaire

Questionnaires are seen as an effective quantitative method for gathering quantifiable data from a large number of respondents efficiently without requiring extensive time or resources. The questionnaire included both closed-ended questions, offering participants predefined response options, and open-ended questions, enabling more nuanced and detailed responses. A total of 17 questions were framed based on the literature review, categorized into topics:

- **Introduction questions:** get to know the company and the participant's professional background
- **Agile methodology, practices, and tools:** get to know how the company adapts to agile practices and tools
- **Agile leadership:** get to know how the company applies the agile leadership principles
- **Organizational culture and teamwork:** get to know how communication and collaboration within the company are.

We also included an open-ended question in the questionnaire for respondents to express any additional thoughts, feedback, or suggestions they may have. Table 3.1 presents an overview of the categories, including which questions belong to each category. The questions can be found in Appendix B.

Category	Questions
Introduction	Q1, Q2, Q3
Agile methodology, practices and tools	Q4, Q5, Q6, Q11, Q12, Q13, Q14, Q15, Q16
Agile leadership	Q7, Q8
Organizational culture and teamwork	Q9, Q10

**Table 3.1:** Questions categorization

The questionnaire was a web-based survey open to anyone. The participants remained anonymous, but their roles within the startup were disclosed. This was crucial for understanding whether perspectives were provided by leaders, such as co-founders, CEOs, or managers, or by team members of the startup.

### 3.3.3 Interviews

A set of semi-structured interviews was used in this study. As suggested by Hove and Anda [67], a set of open-ended questions and multiple-choice questions was prepared to gather relevant data and allow the interviewees to respond to the questions as they prefer. The interview questions focused on the research questions outlined in section 1.1. The predetermined questions were derived from the various topics found in the literature review to maintain consistency and comparability of responses throughout the interviews. Additionally, follow-up questions were spontaneously formulated based on the interviewee’s responses.

Before the interviews, participants were reminded about the confidentiality and anonymity of the study, as well as its purpose. The interview began with some simple introductory questions to gain a deeper understanding of the participants’ professional backgrounds and the startup company. Then a set of questions were asked, addressing each topic related to the research questions. The introduction to the interviews can be found in Appendix A.

All interviews were conducted by both researchers, providing several advantages as suggested by Hove and Anda [67]:

1. having two interviewers typically results in more questions being asked, thereby gathering more information
2. dividing the responsibilities allows for a smoother flow of follow-up questions, and
3. the likelihood of accurately understanding the subject increases when the two interviewers can interpret what is said and discuss it afterward.

Additionally, all interviews were recorded and transcribed into written text, which

facilitated the analysis of the data, allowing for a comprehensive review of the responses provided by the interviewees.

Some interviewees were chosen from the participants who had completed the questionnaire. This ensured that those who provided valuable insights through the questionnaire were allowed to further elaborate on their responses during the interviews. Additionally, this approach fostered continuity and coherence between the quantitative data gathered through the questionnaire and the qualitative insights obtained from the interviews.

### **3.3.3.1 Participants**

Before the start of the study, five startup companies were said to be available for detailed study. Our first approach was to send invites to the founders and leaders. We invited them to a meeting where our study was presented and their participation in the study was discussed. This engagement led to interview questions and the drafting of the questionnaires. The interview bookings were done in line with the study's target number. Subsequently, questionnaires were sent to startup incubators and startup ventures and also shared with our LinkedIn connections. Our participants had a chance to see and correct the results from the interview. The details of the results were shared with the participants before it was included in the report. This approach increased the reliability of the results because the wrong statement was corrected although most participants were anonymous.

### **3.3.3.2 Group Interview**

During the first rounds of group interviews, we conducted four group interviews that comprised 2-3 participants each. The first two group interviews consisted of only leaders of startups and the second two group interviews consisted of team members of the startups. The first two groups consisted of the CEO, product owner, scrum master, and product manager of different startups while the second two groups consisted of team members within different startups, without leadership roles. We had this division to gather honest opinions without fear of another level of hierarchy. The result from the group interviews is necessary for exploring the long-term agile success for startups and entrepreneurship.

### **3.3.3.3 Individual interview**

During the second round of the individual interview, we conducted individual interviews with five participants which consisted of three leaders and two members of a company. The questions were derived from three perspectives, The first is to close the gap in knowledge regarding our research questions. Also, the questions were developed based on agile methodology, agile leadership, culture, and teamwork. The result of all the interviews brought about a detailed comprehension and profound understanding of the research topic.

### 3.4 Data analysis

To conclude long-term agile success for startups and entrepreneurship within the study team, all the data we collected during the study process was reviewed, analyzed, and compared with existing studies and research papers. A few of the interviews were recorded and transcribed. The transcript was also analyzed, in which useful and relevant information was extracted and taken. Both researchers conducted this analysis independently to increase reliability. A comparison was done after the first round of interviews was conducted to determine common patterns and common opinions. To facilitate comparability, we ensured we standardized terminologies. A similar process was applied to the other rounds of interviews.

All findings from the interviews were used to answer **RQ1**, **RQ2** and **RQ3**. All discussions are centered on unraveling the concepts in the study by relating the results with relevant theory.

### 3.5 Ethical consideration

During the analysis and planning phase of the interview, guidelines for ethical interviews in software engineering, as presented by Strandberg were followed [68]. However, we observed that there could be risks when studying real situations and people. Participants were interviewed anonymously, especially the staff, to prevent disadvantageous consequences. The interviews were also conducted in a manner that avoided situations that could make any participant feel uncomfortable.

# 4

## Results

This chapter presents the findings of our study, which aimed to explore long-term agile success for startups and entrepreneurs. The study was conducted through a questionnaire, group, and individual interviews. To protect the anonymity of participants, we assigned fictional names, as shown in Table 4.1. The table displays each fictional name along with the corresponding role, professional experience within the current startup, and the type of startup. To preserve the confidentiality of the startup, its name has been omitted. These fictional names were assigned before the interviewees, and it's important to note that the gender of the fictional character may not align with that of the interviewee. Furthermore, it's important to note that the fictional names do not reflect the personalities of the interviewees. Additionally, a thematic analysis was conducted after the interviews to identify different themes based on the interview transcripts. These themes were carefully examined to gain insights into leadership and their ways of working with agile methodologies. The findings from this analysis provided a comprehensive understanding of the interviewees' experiences and opinions, which were essential in addressing the research questions and drawing conclusions. The different themes for the respective questionnaires, as well as group and individual interviews, are presented in tables in each section later on.

Interview	Fictional name	Role	Professional Experience	Type of Startup
Group 1	Oscar	Product owner	5 years	Software
Group 1	Kevin	Scrum master	4 years	Software
Group 2	Angela	CEO	3 years	FinTech
Group 2	Liam	Product manager	3 years	FinTech
Group 3	Victoria	Software developer	7 years	Software
Group 3	Michael	Software developer	3 years	Software
Group 3	Lucas	UX designer	4 years	Software
Group 4	Natalie	Software test engineer	3 years	FinTech
Group 4	Olivia	Business analyst	1 year	FinTech
Group 4	Gabriel	Software developer	10 months	FinTech
Individual 1	William	Product owner	12 years	Software
Individual 2	Benjamin	Scrum master	8 years	Software
Individual 3	Kelly	CEO	4.5 years	Clothing brand
Individual 4	Sophia	Designer	3.5 years	Clothing brand
Individual 5	Ethan	Software developer	4 years	FinTech

**Table 4.1:** Fictional names assigned to the participants and their professional background.

## 4.1 Questionnaire

The findings obtained from the web-based questionnaire served as the foundation for identifying key aspects to explore during the group interviews. These findings provided essential insights into specific themes and challenges, which guided the formulation of interview questions and discussion topics. All participants remained anonymous, and the findings discussed in this section are general and not attributed to any specific participant. Table 4.2 presents the overview of the themes covered in the questionnaire. The questions and diagrams from the questionnaire can be found in Appendix B.

Themes
Introduction
Agile methodology and practice
Agile leadership
Organizational culture and teamwork

**Table 4.2:** Overview of questionnaire themes

### 4.1.1 Summary and analysis

This section provides a summary and analysis of the findings obtained from the questionnaire, drawing connections between the findings and the literature review

in the related work section. The specific themes that the questions are categorized into are presented as bold headings.

### **Introduction**

Questions regarding the age band of the startup, the number of staff, and the participants' roles are categorized in the introduction section. The participants included both leaders and team members, such as product owners, scrum masters, CEOs, and co-founders, among others. The team members comprised software developers, quality assurance engineers, software test engineers, and so forth. This diversity was beneficial as it provided varied perspectives.

These findings reveal that the majority of companies fall within the 3-year age band. This may indicate that they are in a stage of development characterized by rapid growth and adaptation. However, there are also many startups still in their early stages, ranging from 1 to 2 years, which may face more challenges regarding their teams and establishing their market presence. According to Zielske et al., newly established startups, adopt agile practices to discover product ideas and create customer value [23]. Additionally, some participants indicated that their startups have been in operation for 6 years or more, highlighting the potential sustainability of these ventures. These startups have navigated challenges, established their market presence, and found their strategies to achieve long-term success.

Some startups operate with smaller teams, comprising one to three members, potentially indicating that they are in the early stages of development or have a specialized focus that requires a smaller workforce. Conversely, there are startups with larger teams, consisting of six or more members, which may suggest that they are more established or experiencing rapid growth. The majority of startups consist of four members, which may suggest that they have moved beyond the stage of establishing teams and are now in their development stage.

### **Agile methodology and practice**

The questions concerning agile methodologies, practices, and tools play a crucial role in yielding findings relevant to the research questions. All participants were aware of agile methodologies, and the majority practiced some form of agile practices, including Scrum, Kanban, Lean, etc. The majority believe that the continuous feedback and iterative improvement inherent in agile methodologies foster a positive work environment and ensure sustainable success for the team. Some participants noted that by embracing a culture of continuous learning and improvement, teams can adapt to change, deliver higher-quality outcomes, and achieve their goals more effectively. Others mentioned that continuous feedback and iterative improvement are important in any company, fostering growth within an organization and helping to keep the team aligned with evolving goals and priorities.

Most participants consider agile methodology beneficial for their startup. The ma-

majority believe it has helped expedite time-to-market, prioritized customer-centric approaches, and facilitated responsiveness to change. This aligns with Souza et al. which observes that the adoption of agile practices can accelerate the time-to-market [21]. Some mentioned that agile methodologies have been beneficial, improving quality and innovation by utilizing resources efficiently and fostering innovation among team members. While most participants recognize the advantages of agile practices for their startups, a few express concerns regarding their compatibility with highly regulated company laws. Agile prioritizes working software over comprehensive documentation, which aligns with the Agile manifesto [10]. However, this conflicts with the stringent compliance standards imposed by such laws. Compliance requirements necessitate thorough documentation, potentially hindering the agile approach. Consequently, during compliance audits, the flexibility of agile practices may not suffice, posing challenges for startups operating within regulated environments.

One question asked how the business was before and after adopting agile methodologies. The majority of participants shared the same perspective: they faced challenges with delivering products on time and experienced issues with communication, roles, and collaboration. After adopting agile practices, most participants believe that the work structure, roles, collaboration, and communication improved. Some participants have not experienced the transition from not using agile methodologies to using agile methodologies but highlight the advantages of using agile practices. These include iterative development and flexibility. However, some mentioned that there are some disadvantages with agile methodologies. The main challenge is that agile methodologies rely heavily on collaboration and communication within the team. Breakdowns in communication or conflicts among team members can hinder the effectiveness of agile practices and lead to delays or inefficiencies in project delivery.

Some challenges that the majority of the participants encountered include delivering on time to customers, issues with the available technical tools, stakeholders' acceptability of change, economic aspects, and conflicts within teamwork. The majority believe that agile methodologies and practices could help address these challenges. Overall, most participants believe that the agile methodology could contribute to the long-term success of startups and entrepreneurs.

### **Agile leadership**

The majority shared the same perspective on the importance of effective leadership within the startup, especially concerning its organizational culture, which significantly influences its development, particularly considering the limited number of employees. Effective leadership offers a clear vision and direction. A positive and supportive culture encourages creativity, collaboration, and innovation, driving the development process forward. Some mentioned that as a leader, they always prioritize the development and well-being of every employee. By prioritizing the growth and happiness of team members, they ensure the team members feel valued and motivated to contribute their best to the company's success.

One question asked if the adoption of agile leadership principles can enhance the effectiveness of leadership in startups, making it more adaptable and conducive to success. All participants answered yes. Some explanations include that agile teaches transparency, which enables leaders to positively drive the company. Others mentioned that the adoption of agile leadership principles will enhance team adaptability. Agile leadership places a strong emphasis on understanding and meeting customer needs, which is a key point for success. These explanations align with Chow and Cao's study about factors contributing to success [25]. Some factors they highlight in their study are customer involvement, team environment, and delivery strategy. Overall, these findings provide insight into how adopting agile leadership principles can contribute to the long-term success of startups by fostering transparency, enhancing team adaptability, and prioritizing customer-centricity.

### **Organizational culture and teamwork**

The organizational culture and teamwork are key factors for team success, which are also crucial for project success. Most participants emphasize that proper communication has enabled better collaboration within their teams. Clear communication ensures that all team members understand their roles, responsibilities, and the overall objectives of their work. Some participants mentioned that good communication and collaboration foster an environment where ideas can flow freely and creativity can thrive. This aligns with Abdul Rashid et al. which state that organizational changes pose a significant challenge for many organizations [30]. The organization's nature, such as work culture, values, and leadership style, plays a pivotal role in shaping the effectiveness of communication and collaboration within teams. A positive organizational culture, characterized by trust, and support for innovation, fosters an environment conducive to effective teamwork and project success.

Majority of the participants also believe that collaboration with other teams is also important. Good collaboration with other teams helps to avoid duplicating work and ensures that tasks are completed promptly. It enables members to share knowledge and expertise with others. By sharing insights, experiences, and feedback, team members can inspire new approaches and challenge assumptions.

## **4.2 Group interviews**

Table 4.3 provides an overview of the themes that emerged during the initial group interviews. These discussions involved leaders and team members and addressed key topics relevant to the research questions. Additionally, it's important to note that certain themes may not be represented in all interview findings due to some participants not providing significant insights or opinions on specific subjects, resulting in a lack of relevant information.

Group interview themes
Goals
Roles
Ways of working
Challenges
Leadership
Team maturity
Self-organizing

**Table 4.3:** Overview of the group interview themes

### 4.2.1 Group interview 1 - leaders

Oscar has a background in software engineering and has held various positions within the software industry for the past 5 years. Despite lacking prior experience, he joined the current software startup as a product owner. Currently, he oversees a team of 7 members in this role. Kevin also comes from a software engineering background and has served as a scrum master for 2 years with a team of 4 members. Before that, he worked as a software developer for a large company for 2 years.

#### Goals

Oscar explains that as a leader in a software startup, it is important to provide a clear vision and direction. A positive and supportive culture fosters creativity, collaboration, and innovation, driving the development process forward. Kevin acknowledges this, mentioning that in his team, members are well aware of the goals. As a scrum master, he always strives to offer guidance and help the team achieve these goals. He explains that by providing continuous support and facilitating collaboration within the team, he aims to empower them to overcome challenges, address impediments, and achieve their goals with all the necessary assistance.

#### Roles

Oscar claims that ambiguity in roles tends to cause stagnation as one person takes on two or more roles due to limited staff. When roles are not clearly defined or are stretched due to limited resources, it can lead to inefficiencies, confusion, and ultimately stagnation within the organization. Kevin acknowledges Oscar's opinion and continues by stating that ambiguity in roles can also increase the risk of burnout among team members. Kevin describes a situation where a team member experienced burnout due to feeling overwhelmed by taking on too much work.

#### Ways of working

Oscar and Kevin use Scrum as an agile methodology for their teams, agreeing that it is well-suited for iterative development in software projects. They emphasize Scrum's ability to promote collaboration, focus on delivering customer value, and

expedite time-to-market through regular iterations. The continuous feedback and iterative development help keep the team aligned with evolving goals and priorities, improving overall performance.

Kevin describes how his team swiftly adapts to changing market conditions while maintaining user satisfaction through continuous stakeholder feedback and iterative development increments, leading to frequent product launches. He also explains that they faced challenges in delivering projects on time and meeting customer satisfaction before adopting agile methodologies. The traditional waterfall model they previously used proved less effective in responding to changing requirements or addressing customer needs promptly. Oscar asserts that, as a product owner, the Scrum framework has been beneficial, providing a structured approach to product development with clear roles and practices, leading to transparency and accountability within teams.

### **Challenges**

Both Oscar and Kevin have encountered challenges during their time as a product owner and scrum master in a startup. Oscar explains that his team faced difficulties in delivering on time to customers. Although backlog items were prioritized, Oscar, as a product owner, ensured that the team focused on the most valued tasks. However, the team failed to deliver on time due to unclear requirements. Kevin agrees with Oscar, noting that his team also struggled to deliver on time. They faced communication issues and impediments hindering progress. Kevin, as a scrum master, is responsible for guiding the team through the Scrum process, addressing impediments, and supporting teamwork within the group. He ensures that the team works effectively together and overcomes obstacles.

#### **4.2.2 Group interview 2 - leaders**

Angela, with a background in finance and economics, serves as the CEO of a FinTech startup, where she leverages her expertise to drive strategic initiatives and foster innovation in the rapidly evolving financial technology sector. She leads a team comprising 5 members. Liam, who studied computer science, commenced his career at a large company for 2 years before joining his current FinTech startup as a product manager. He has been with the company for 1 year, collaborating with 4 other team members.

### **Goals**

Liam emphasizes the importance of having both smaller and larger visions and goals within a team and startup. He explains that in his team, the goal is very clear, asserting that it is to continue developing and delivering a product that meets the needs of customers. Angela acknowledges the importance of clear goals. However, she argues that there is a lack of clarity regarding the goals of her startup. While there are various smaller departments, such as finance and product devel-

opment, there should be a coherent plan between the departments. She advocates for a shared overarching goal to encourage the establishment of sub-goals within departments, fostering alignment and comprehension of their shared goals.

### **Roles**

After deliberations, Angela emphasizes the importance of having clear roles within an organization. She describes how her startup has improved its effectiveness since adopting agile leadership principles. Angela explains that agile leadership places a strong emphasis on understanding and meeting customer needs, which is crucial for success. Liam acknowledges her opinion and adds that effective leaders who understand their roles well encourage flexibility and adaptability in response to changing market conditions and customer feedback.

### **Ways of working**

Liam explains that historically, they have employed a waterfall-driven approach but are currently transitioning towards agile development, specifically utilizing the Kanban approach. He believes that this approach is beneficial for the fast-growing market where products need to be delivered on time. Meanwhile, Angela favors Scrum, which she finds works well for her startup. Angela emphasizes the importance of regular sprints and defined iterations in efficiently achieving their product development goals.

Despite their differing perspectives, both Liam and Angela agree on the necessity of embracing agile methodologies to adapt to the dynamic nature of the market and meet customer demands effectively. They recognize that selecting the most suitable approach depends on factors such as team dynamics, project complexity, and organizational culture. Angela, in her role as CEO of the startup, emphasizes how agile practices prioritize people over processes. To illustrate her point, she shares a scenario where achieving a specific number of tests is not the end goal; rather, delivering high-quality software is. This emphasis on delivering value to customers showcases how people are prioritized over processes in agile methodologies.

### **Challenges**

Angela describes how they have addressed some financial challenges by hiring people and utilizing resources. Since their startup is in the process of expanding, she needs to hire experienced individuals due to the limited number of resources available. The process of hiring employees is critical to success, and if the founder lacks sufficient knowledge of the field, the startup might fail due to human resource management issues. She explains that what has worked for her is to define clear roles and requirements to identify the key qualifications and skills required.

Liam cannot agree as he has not experienced the same. However, he understands her point of view, acknowledging the challenges of expanding an organization in its early

stages, particularly the need to scale up the workforce. Liam continues and explains that in his startup, their challenge has been the abundance of leaders. They believe that there are too many leaders relative to the number of employees, which has created issues with decision-making. This imbalance has led to conflicting priorities and a lack of clarity in roles and responsibilities, hindering the team's ability to work efficiently towards their goals.

### **4.2.3 Group interview 3 - team members**

Victoria has a background in software engineering and has been a software developer for 4 years at a software startup. Before that, she gained 3 years of experience as a software developer at larger companies. Michael, who also studied software engineering, works as a software developer alongside Victoria. He has 2 years of experience as a developer before joining the startup. Lucas, with a background in interaction design, has been a UX designer for 1 year at the same software startup as Victoria and Michael. Before this, he has 3 years of experience as a UX designer at a large company.

#### **Leadership**

They describe that their leaders, specifically their scrum master and product owner, shield the team from external disruptions by managing communication with other teams and management who seek their time and effort. Victoria explains that if another team approaches them with requests, they need to communicate with their product owner because he is the one who prioritizes their backlog. The product owner often collaborates closely with stakeholders, including other teams and management, to gather requirements, provide updates on the product's progress, and offer feedback. The product owner's communication with other teams and management focuses on ensuring that the product vision is understood. Michael continues and asserts that if impediments hindering the team's progress originate from another team, then it is the scrum master's responsibility to address and assist the team in overcoming them.

#### **Team maturity**

When discussing team maturity, Lucas states that, as a UX designer, he perceives the team as fairly immature due to the formation of sub-groups. He further explains that communication among all team members is limited, as most problems are addressed within the sub-groups rather than as a whole team. Victoria and Michael agree that sub-groups have formed, acknowledging that not all members work on the same tasks. However, they believe that this structure can lead to decreased collaboration across the entire team but potentially increase overall productivity and effectiveness as they only work on their specific areas.

#### **Self-organizing**

Victoria believes that their team is self-organizing. Michael elaborates, mentioning that their team lead doesn't need to micromanage them due to their experience in their respective roles and responsibilities. He emphasizes that team members know whom to contact if they encounter any issues. Additionally, he highlights that everyone in the team comprehends their tasks and operates systematically. However, Lucas acknowledges that this sometimes results in reduced communication among team members since they are focused on different aspects of their tasks. As a UX designer, Lucas's communication with the development team is reduced since he doesn't need to have daily contact with them.

### **4.2.4 Group interview 4 - team members**

Natalie has a background in software engineering and has worked as a software test engineer for the past year. Before that, she gained 2 years of experience as a software quality assurance engineer. Gabriel, who also studied software engineering, has worked as a software developer for 10 months at the startup. Olivia, with a background in data science, currently works as a business analyst. Although she has no prior experience in the role of a business analyst, she did work as a data scientist for one year.

#### **Leadership**

Gabriel describes how effective leadership has impacted their development, especially considering the limited number of employees in their startup. He highlights the importance of leaders having a clear vision and a strong commitment to the startup's goals. Their dedication has played a crucial role in driving progress. With a clear direction established by the leadership team, team members are aware of what to do and what the result should be.

#### **Team maturity**

Natalie explains that her team is fairly immature. She emphasizes the importance of communication, stating that a shared understanding of the project's status is crucial on a daily basis. Without it, uncertainty and mishaps arise. Olivia disagrees with Natalie, explaining that her team is mature. She argues that her team's maturity level is sufficient, pointing out their established communication channels and processes that adequately address project updates and prevent misunderstandings. Olivia asserts that daily check-ins have been beneficial for her team and that they operate efficiently with such frequent updates.

#### **Self-organizing**

Olivia asserts that because her team is mature, they have a greater ability to self-organize. She explains that they have established efficient workflows and clear roles within the team, allowing members to autonomously manage their tasks and collaborate effectively towards common objectives. Olivia emphasizes that this level

of autonomy fosters a sense of ownership and accountability among team members, contributing to their overall productivity and success as a team. Nathalie thinks that her team does not self-organize. She points out that lacking structured processes and defined roles often results in tasks overlapping or being neglected, causing inefficiencies and project delays. Nathalie highlights the importance of good coordination and communication within the team to enhance their capacity for self-organization and better collaboration.

#### 4.2.5 Summary and analysis

This section provides a summary and analysis of the findings obtained from the group interviews, drawing connections between the results and related work. The findings are categorized into specific themes, presented as bolded headings in the subsequent analysis, and form the basis for the key aspects presented in the next section. Figure 4.1 presents an overview of the themes.



**Figure 4.1:** Overview of the group interview themes

#### **Clear and shared goals**

Multiple interviewees expressed their perspectives on the importance of having clear and shared goals. As leaders, it is important to provide clear and shared goals as they foster creativity, collaboration, and motivation among employees. This statement is supported by Wageman, who argues that well-defined goals and objectives are key factors in establishing successful self-managing teams [42]. The leaders bear the responsibility for establishing these goals and objectives. Effective leadership encompasses not only the establishment of clear goals but also the inspiration and motivation of team members to collaboratively work towards them. Additionally,

leaders are tasked with prioritizing the backlog to ensure that it aligns with the overarching goals and delivers value accordingly.

One interviewee noted that, if there are different departments within the startup, there needs to be coherent goals and vision between the departments. A shared overarching goal encourages the establishment of sub-goals within departments, fostering alignment and comprehension of their shared goals. As Tripp and Armstrong highlight, it is important to adopt a customized approach to implement different agile practices that suit the unique needs of the startup and the specific goals [22].

### **Role clarity**

The interviewees raised concerns about role clarity and accountability within the startup. It was observed that role ambiguity within an organization can have negative effects, as it often results in inefficiencies and confusion, ultimately leading to stagnation. To address this issue, some interviewees suggested following the agile leadership roles. The suggestion to follow agile leadership roles aligns with findings by Gandomani et al., who observed that in agile methodologies, responsibilities are distributed among team members to ensure effective project management [25]. This distribution of responsibilities promotes clarity and accountability, as each team member has defined roles and tasks to contribute to the project's success. By adopting agile leadership principles, the startup can potentially enhance role clarity, improve collaboration, and mitigate the negative effects of role ambiguity. However, Spiegler et al state that there is still uncertainty regarding the roles and responsibilities, more specifically in a team inherently characterized by self-organization [27].

### **Different ways of working**

The interviewees expressed similar views regarding the importance of adopting agile methodologies. One interviewee acknowledged that the startup prioritizes people over processes to deliver customer value, which aligns with the agile manifesto [10]. While some interviewees utilize Kanban and others prefer Scrum, all interviewees shared similar perspectives on the significance of iterative development and continuous feedback. These align with Schwaber's conclusion that the Scrum methodology is considered the most effective problem-solving approach for navigating a market economy characterized by constant changes and rapidly evolving technology [17].

### **Effective leadership**

Some interviewees shared their experience as members of a team of being shielded from external distractions by their leaders, in particular their product owner and scrum master. They pointed out that if another team approaches them with requests, they should communicate with their product owner, as he is responsible for prioritizing their backlog. According to them, the product owner's communication with stakeholders makes the product vision clearer. Some interviewees also shared that their scrum master addresses and assists the team if impediments hinder the

team's progress. Schwaber supports the interviewees' preferences as their study shows that agile leaders should shield teams from other teams or customer demands to ensure productivity [17].

One interviewee emphasized the importance of effective leadership, especially during the initial stages of startups when there are a limited number of employees. Grant describes these early-stage startups as newly formed entities focused on developing their product or service and researching markets [51]. Therefore, the leader's dedication plays a crucial role in driving progress forward and expanding the startup.

### **Challenges encountered by startups**

The interviewees shared similar perspectives on the challenges encountered. One challenge is the difficulty of delivering on time to customers. Despite the product owner prioritizing the backlog with the most valued tasks, the requirements for each task were not clear. This situation aligns with the theory by Souza et al., which states that startups mainly adopt sustainable and repeatable agile practices that aid in accelerating product delivery for a fast-growing market [21]. Another interviewee shared that their startup encountered challenges in delivering projects on time due to communication issues within the team. A scrum master explained that within their team, communication and collaboration were ineffective, leading to impediments in progress. Therefore, the scrum master supported the team by addressing these challenges. This type of challenge aligns with Martin's argument that to ensure project success, it is essential to build collaborative and self-organizing teams [9].

One interviewee highlighted the financial challenges associated with expanding the startup, particularly through hiring employees and acquiring resources. As startups evolve, the need for employees becomes critical, especially in developing prototypes. Consequently, the recruitment process plays a pivotal role in the success of a startup. This challenge aligns with Salamzade and Kesim's assertion that the recruitment process is vital for startup founders [54]. Insufficient knowledge of human resource management by the founder could lead to failure. According to the interviewee, the suggestion is to define clear roles and requirements to identify the essential qualifications and skills needed.

Another interviewee shared a challenge they faced: an abundance of leaders. They argue that the imbalance between the number of leaders and employees has led to decision-making challenges. This imbalance has caused conflicting priorities and unclear roles and responsibilities, impeding the team's efficiency in achieving their goals. Gandomani et al. have raised questions regarding the role of a project manager and its necessity [25]. They emphasize that in Scrum, responsibilities are distributed among team members, suggesting that multiple leadership roles may not be needed. According to Moe et al. research, the scrum master and product owner initially reduce team leadership by controlling the team [26]. However, they argue that for teams to achieve self-organization, they require support and resources from

management, necessitating the involvement of leaders.

### **Team maturity challenges**

Some interviewees shared similar perspectives on the challenge of team maturity, noting that the team is not working collaboratively but rather in sub-teams. Some found that this reduces teamwork, while others found it to be more efficient and productive. This challenge aligns with Gren et al.'s study, which suggests a relationship between a team's maturity level and agile practices [40]. Adopting agile practices such as retrospectives and iterative development can serve as synchronization points for team members. While sub-teams working on separate tasks can be efficient, everyone needs to be aware of the goals and actively participate in retrospectives and daily standups to update each other.

Some team members have expressed that their team is mature, highlighting their established communication and collaboration. Daily check-ins and frequent updates have been crucial for their team's maturity. This assertion aligns with Gren and Lindman, who state that mature teams fully embrace the agile practices they find beneficial [39].

### **Self-organizing experienced teams**

Some team members expressed that mature teams are often self-organizing, reducing the need to have a leader to manage them. They have established a workflow and know what to do and who to contact if any issue arises. This experience is described by Simard and Lapalme who claim that when teams self-organize, they collaborate by understanding their tasks, taking responsibility, and anticipating what to expect [44].

Other team members shared that their team is not self-organizing due to the absence of structured processes and defined roles, which often result in tasks overlapping or being neglected, causing inefficiencies and project delays. They emphasize the importance of good coordination and communication within the team to enhance their capacity for self-organization and foster better collaboration. This suggestion aligns with Simard and Lapalme's assertion that self-organizing teams collaborate by understanding, taking responsibility, and anticipating what to expect [44].

### **4.2.6 Key aspects**

The following bullet points summarize the key aspects gathered from the group interviews.

#### **Agile leadership**

- Unclear leadership roles

- Unclear goals and visions
- Lack of shared goals

### Agile methodology and practices

- Positive and negative on common ways of working

### Organizational culture and teamwork

- Lacking team maturity
- Close to self-organized teams
- Lacking communication and collaboration

## 4.3 Individual interviews

Table 4.4 provides an overview of the themes that emerged during the second round of interviews, which involved individual sessions. These discussions involved both leaders and team members and addressed key topics relevant to the research questions, along with their general viewpoints. Similar to the group interviews, certain themes may not be represented in all interview findings due to some participants not providing significant insights or opinions on specific subjects, resulting in a lack of relevant information.

Individual interview themes
Goals
Roles
Ways of working towards long-term success
Teamwork
Leadership

**Table 4.4:** Overview of the individual interview themes

### 4.3.1 Individual interview 1 - leader

William, a product owner, leads a team in a software startup, adhering to the Scrum methodology. With a background in software engineering, he held various roles for 10 years before joining his current startup. For the past 2 years, he has served as a product owner.

### Goals

William observes that the startup has a clear vision and shared goals. He works on creating clear visions and tasks for the teams together with the founder of the startup. In his opinion, without a clear vision and goals, it is impossible to achieve success. He believes that clarity in vision and goals provides a roadmap for the team, guiding their efforts and ensuring alignment towards a common objective.

### Roles

William describes the roles within their startup as clear, with each role having its designated responsibilities aligned with Scrum principles. Specifically, he notes the clarity in identifying the Scrum Master role. However, he argues that there are instances where the presence of the Scrum Master is lacking. William suggests that in mature teams where members are aware of their responsibilities, the role of the Scrum Master may become redundant. Conversely, in less mature teams, the Scrum Master plays a crucial role in enhancing productivity, addressing impediments, and optimizing effectiveness during development.

### Ways of working towards long-term success

William elaborates on how the adoption of agile practices, specifically leveraging the Scrum methodology, has completely transformed their startup's workflow. With tasks broken down into manageable sprints, they effectively avoid wasting resources by focusing on essential features and iterations. Additionally, the routine stand-up meetings and retrospectives have cultivated a shared understanding among team members, ensuring everyone is on the same page regarding project goals and progress. Moreover, William highlights the iterative nature of Scrum, which enables rapid adaptation and innovation, allowing them to respond effectively to the fast-changing market. This iterative approach not only boosts productivity but also fosters continuous improvement within the team, driving the success of their startup.

### Teamwork

As a leader, it is crucial to prioritize effective communication and collaboration with my team members. Clear and open lines of communication ensure that everyone is informed, engaged, and aligned with the team's goals and objectives. William explains that most of the time they work from the office, which greatly enhances collaboration and communication among team members.

### 4.3.2 Individual interview 2 - leader

Benjamin, a scrum master in the same software startup as William, has worked in his position for one year. He has a background in software engineering and has prior experience as a software developer for larger companies.

## Goals

Benjamin raised concerns regarding the goals they are working towards. He explains that although there are high-level goals, Benjamin expresses uncertainty about how the individual tasks and activities directly contribute to achieving these goals. This lack of alignment between tasks and high-level objectives can lead to inefficiency and a sense of aimlessness among team members.

## Roles

Benjamin expresses that roles within the startup are clearly defined and well-understood by all team members which is important for effective collaboration and productivity. Furthermore, Benjamin observed that most team members are familiar with agile methodologies and their respective roles.

## Ways of working towards long-term success

Benjamin acknowledges the superior agile skills of his team members and recognizes their consistent delivery of satisfactory outcomes, ensuring customer satisfaction. As a leader, he believes that agile practices serve as the main key to their startup's success, providing for adaptability and continuous improvement. While the team has successfully implemented basic Scrum practices, Benjamin admits that there was a period when they discontinued retrospective meetings, a decision he now acknowledges as a missed opportunity for valuable feedback and reflection, especially for teamwork. Reflecting on lessons learned, he now prioritizes these meetings to foster a culture of continuous learning and improvement within the team. Additionally, Benjamin highlights the importance of daily stand-ups as a means of enhancing communication and alignment among team members, along with backlog refinement sessions to ensure clarity and prioritization of tasks. Through these practices, Benjamin believes that his team will continue to drive the startup towards its long-term success.

## Teamwork

Benjamin raised some concerns about teamwork in his team. He explains that some team members do not have prior experience, which makes it harder for them to work together effectively. He describes that some are more engaged than others, leading to certain members taking on more responsibilities than others. He characterizes his team as having a lower level of team maturity, attributing this to the differences in engagement levels. As a scrum master, he always helps and supports the team by addressing impediments and prioritizing tasks and responsibilities among the team members.

### **4.3.3 Individual interview 3 - leader**

Kelly holds a Bachelor of Science degree in Business and Economics. She serves as the CEO of a clothing brand startup and has been leading this organization for 1.5 years. Before her role as CEO, Kelly worked as an economist for three years. With a strong interest in the fashion industry, she initiated the establishment of the organization.

#### **Goals**

Kelly explains that within the startup, they have clear goals and a well-defined vision. While the goal and vision are to establish a successful clothing brand, it is also important to make a meaningful impact within the fashion industry. By prioritizing innovation and uniqueness in their products, Kelly believes their startup can not only succeed as an organization but also contribute positively to the evolution of the fashion industry as a whole. She highlights the importance of aligning the team's efforts with these goals to ensure that the organization is moving in a direction conducive to success, fostering a culture of collaboration, creativity, and motivation within the team.

#### **Roles**

Kelly describes the roles within the team as clearly defined. With the startup consisting of only four individuals, each member's responsibilities are well understood. There is a strong sense of teamwork, where all members support one another, and everyone knows who to reach out to if an issue arises. This clarity in roles and responsibilities fosters effectiveness and collaboration, enabling the team to work efficiently towards their common goals.

#### **Ways of working towards long-term success**

Kelly raised some concerns regarding the agile methodology and practices for their team. She mentioned that while she acknowledges the benefits of agile methodology and considers it a good approach, she doesn't believe it's entirely suitable for their team. Kelly explained that for projects requiring strong regulatory compliance and strict specific requirements, agile practices may not always be applicable. To illustrate her point, she explained that their projects often require attention to legal or industry standards that dictate certain processes or documentation requirements. Therefore, she suggested favoring a waterfall approach over agile methodologies for their specific startup.

#### **Teamwork**

Kelly believes that her team exhibits strong teamwork. She highlights the importance of collaboration and communication among team members, which she views as essential for driving innovation and achieving success. Kelly acknowledges that while her team may face challenges, such as varying levels of experience and engage-

ment, they work together to overcome these obstacles and strive for success. As a leader, Kelly fosters an environment of trust and open communication, encouraging her team to share ideas and collaborate effectively.

#### **4.3.4 Individual interview 4 - team member**

Sophia is a designer at the startup founded by Kelly. With a background in design, she has been working as a designer for the past two years at other companies. Sophia joined the startup as a designer from its outset.

##### **Goals**

Sophia explains that she is aware of the goals and expectations placed upon her. She describes one challenge she faced initially, which was aligning her creativity and vision with the startup's overall goals and vision.

##### **Roles**

Sophia mentions that there is some role ambiguity in their team. While the roles and their responsibilities are clear, she may find herself taking on additional tasks outside of her core role.

##### **Ways of working towards long-term success**

Sophia explains that they employ a waterfall methodology in their work. This approach is chosen due to the specific requirements of their projects, especially when working in heavily regulated industries or environments governed by strict laws and regulations. In these situations, companies must comply with legal requirements and standards. These rules often specify specific processes, documents, or approvals that must be strictly adhered to. Due to these requirements, they prefer the structured and step-by-step approach of the waterfall model over the flexible and iterative approach of agile methodologies.

##### **Teamwork**

Sophia describes how important teamwork is, especially in small teams where sub-teams are not formed, but everyone works together as a whole team. She further explains that communication is the key to team success. By fostering an environment of open communication, team members can continuously share ideas, provide feedback, and address challenges, ensuring that everyone is aligned and working towards common goals, thereby increasing productivity.

##### **Leadership**

Sophia highlights the importance of having leaders who guide them towards achieving the end goals. She believes that leaders play a crucial role in ensuring that team

members are aligned with the startup's goals and visions. Sophia emphasizes that effective leaders foster a culture of adaptability, responsiveness, and problem-solving within the organization. This involves empowering team members to be creative, encouraging open communication and collaboration, and facilitating continuous improvement and feedback. She underscores the significance of leaders who not only set clear goals but also inspire and support their teams to overcome challenges and grow.

### **4.3.5 Individual interview 5 - team member**

Ethan is a software developer at a FinTech company and has worked there for the past two years. He has a background in software engineering and has prior experience as a developer for larger companies before joining the startup.

#### **Goals**

Ethan raises an occasional concern about the team's direction. In a discussion on how to address this, he suggests that the startup could enhance its goal-setting process. Specifically, Ethan advocates for a top-down approach to setting goals, emphasizing the importance of establishing clear priorities to avoid prolonged debates about the most critical projects. He believes that this approach will help the team focus on their efforts and tasks more effectively.

#### **Roles**

Ethan observes that the role responsibilities at the startup lack a clear definition, noting that members often assume ownership of tasks based on personal interests rather than explicit job requirements. While he acknowledges the effectiveness of this approach due to the high level of personal responsibility, Ethan suggests that the startup would benefit from greater clarity and structure in this regard.

#### **Ways of working towards long-term success**

Ethan mentions that his team follows the Scrum framework, and he believes that the startup operates with an agile mindset overall. He explains that his team previously followed two-week sprints but recently transitioned to three-week sprints, resulting in significant improvements in their work and deliverables. This adjustment has proven successful, thanks to modern technology and the fast-changing market. While Ethan recognizes the advantages of agility, such as speed and adaptability, he acknowledges the challenge of keeping pace with rapid changes. Despite having a dedicated Scrum master, Ethan reveals that his team distributes the responsibility among three other members. The only issue he identifies is a lack of clarity regarding work prioritization among multiple teams. Nonetheless, Ethan values the autonomy to adapt and modify structures and processes within his team.

#### **Teamwork**

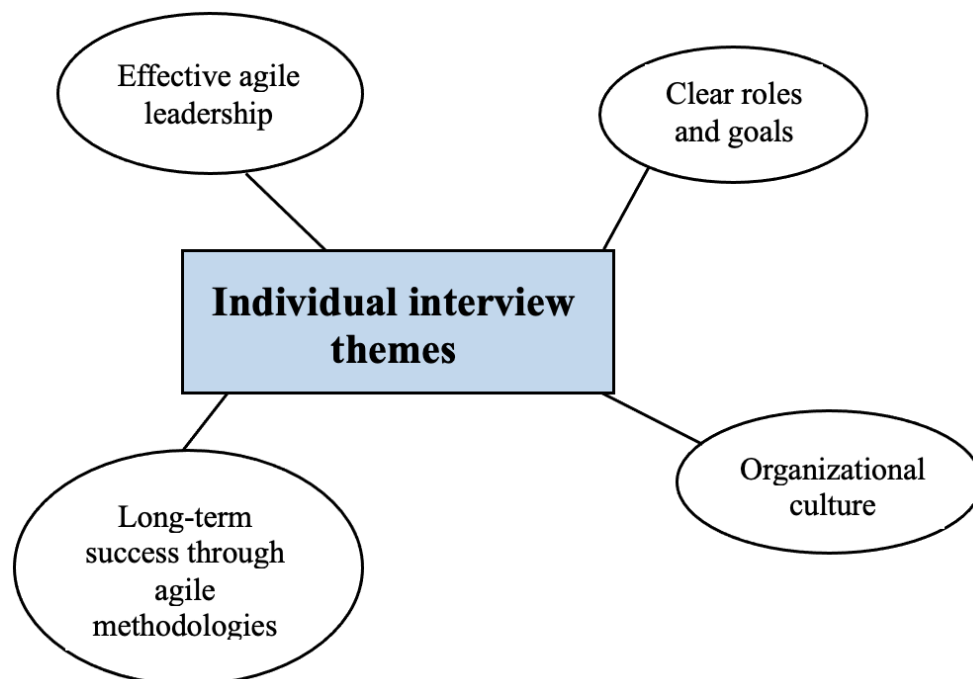
Ethan explains that their teamwork is excellent, characterizing his team as tightly knit. Although there are only three team members, good communication and collaboration are crucial for identifying the right skill set for their project, enabling the team to deliver more effectively. This ensures that the team operates at its maximum potential and can deliver results more effectively, contributing to the success of the team and the startup overall.

### Leadership

Ethan describes the leadership within his team as excellent, and he holds his leader in high regard. He believes that leaders play a crucial role in ensuring that team members are aligned with the startup's goals. However, he feels that leaders need to improve in sharing knowledge, which can be achieved through providing feedback, even when things are going well. Currently, Ethan notes that there is no dedicated time for providing such feedback, a situation he believes should change. Additionally, he observes that leadership is struggling to keep up with the speed of growth in hiring new people. Sometimes, managers are too occupied with new hires to follow up with employees and their goals.

#### 4.3.6 Summary and analysis

This section provides a summary and analysis of the findings obtained from the individual interviews, drawing connections between the results and related work. The findings are categorized into specific themes, presented as bolded headings in the subsequent analysis. Figure 4.2 presents an overview of the themes.



**Figure 4.2:** Overview of the individual interview themes

### **Clear goals and roles**

All interviewees shared the same perspective on the importance of having clear goals and roles in the organization. Some interviewees highlighted the challenge of aligning the team's efforts and capabilities with the goals of the startup. According to Wageman, establishing clear goals would enhance awareness of the direction and foster better teamwork [42]. This alignment not only promotes cohesion but also ensures that efforts are directed toward common objectives, thereby increasing the likelihood of success for the startup.

One interviewee noted that the scrum master role may be absent sometimes depending on the team's maturity and how well the team can self-organize. This aligns with Moe et al.'s study, which shows that the scrum master and the product owner sometimes exert control over the team, leading to reduced team leadership, which is a type of self-organization [26]. Moe et al. explain that for teams to achieve self-organization, they need support and resources from management, which could be provided by the scrum master and product owner [26].

### **Organizational culture**

All interviewees highlight the importance of teamwork and collaboration within the startup, with the majority considering communication and collaboration to be the key to success. This aligns with the study conducted by Chow and Cao, where organization and people are identified as two of the five success aspects contributing to overall success [35].

Some leaders have observed differences between team members with prior experience, who may be more engaged, and those who are less experienced in working within a team. According to Bakker, engaged workers perform better than non-engaged ones [31]. This is because engaged individuals actively strive to maintain their engagement by adapting their work environment, enabling them to effectively navigate challenges and sustain their level of engagement.

One interviewee mentioned that there are only three members in the team, and their teamwork is good. The experience of good teamwork aligns with Tuckman's forming-storming-performing model cited by Ramírez-Mora and Oktaba [38]. The initial stage, "Forming," reflects the interviewee's acknowledgment of the importance of good communication and collaboration for identifying the right skill set within his team. As the team progresses into the "Storming" stage, the interviewee's emphasis on effective communication and collaboration becomes even more crucial in navigating challenges and resolving conflicts. Moving into the "Norming" stage, the interviewee's description of his team operating at its maximum potential and delivering results effectively aligns with the establishment of mutual trust and an open exchange of ideas among group members. During the "Performing" stage, the interviewee's description of his team's contribution to the overall success of the startup reflects the resolution of structural issues and the shared focus and effectiveness ob-

served in high-performing teams.

### **Effective agile leadership**

Some interviewees expressed the importance of having effective leaders who guide the team toward the overall goals to achieve success as well as foster a culture of adaptability, responsiveness, and problem-solving within the organization. Part of the agile leadership principles is to be able to respond quickly to market and environmental changes. Gligor et al. state in their study that the agility of startups relies on their capability to respond quickly and efficiently adapt to changes in the market and environment [37].

### **Long-term success through agile methodologies**

The majority of the interviewees shared the same perspectives that agile methodologies and their practices play a crucial role in achieving long-term success. One interviewee discussed how adopting agile practices, particularly Scrum methodology, has significantly transformed their startup's workflow. By breaking tasks into manageable sprints, they avoid wasting resources and focus on essential features. Routine stand-up meetings and retrospectives ensure a shared understanding among team members. The iterative nature of Scrum enables rapid adaptation and innovation, allowing them to respond effectively to market changes. According to Yau and Murphy, agile development could have different effects and impacts on a startup [8].

Another interviewee mentioned that their team uses the waterfall methodology instead of agile, finding it more suitable for their specific requirements. Due to the need to adhere strictly to legal and industry standards, which require specific processes and documentation, they find that the iterative and flexible nature of agile is not suitable for their needs. This aligns with the findings of Nerur et al., who argue that while agile practices are widely accepted in software development, some believe that traditional development might be more suitable for certain projects or organizations [20].



# 5

## Discussion

This study examines long-term agile concepts in some new contexts especially relating to startups and entrepreneurs' challenges and what factors will contribute to its success. Three research questions were formulated, and the first question was to address the challenges encountered by startups and entrepreneurs in achieving long-term agile success. The second research question was formulated to address how agile methodologies can be effectively adapted in startups to achieve long-term success and growth. The third research question was to address the roles of organizational culture and leadership in startups. We discussed the findings of the research questions in this study from the perspective of each context. The three research questions were systematically addressed step-by-step and by identifying themes with the results. As a final note, we suggest areas for future research with potential threats to validity. Previous research has focused on agile success for big companies, but our study and findings are built on the knowledge base and findings on long-term agile success for startups and entrepreneurs.

### 5.1 Mature teams in startups and entrepreneurship

This study suggests that a relationship exists between having mature teams and the success of startups. Concepts such as self-organizing teams, having processes around shared leadership, maturity of the team and some leadership attributes as suggested by agile methodology are necessary for a successful implementation of agile in startups and entrepreneurship. Having mature teams includes having a team that has shared goals and understands the vision of the company and its execution of the vision and goals of the company. Mature teams have a high level of trust and a culture of open communication together with the support and guidance provided by the leadership of the startups.

Our findings are similar to those of Takeuchi and Nonaka, which highlight that even self-organizing teams that operate with a considerable degree of autonomy need to be controlled, especially by leaders [43]. This relationship helps the startup maintain a clear vision and goals among team members and prevents ambiguity from escalating. Furthermore, the role of leadership in mature teams extends beyond mere control. Leaders in agile environments act as facilitators, providing the necessary resources and support to allow teams to thrive. They encourage innovation, facilitate problem-solving, and ensure that the team's efforts are aligned with the

startup's strategic objectives. By balancing autonomy with guidance, leaders can cultivate an environment where teams are both empowered and accountable, driving the startup toward sustainable growth and success. This aligns with Gren et al. who state that there is a relationship between team maturity and agility [33]. Enabling teams with high levels of agility and maturity are strong commitment to teamwork, open communication, and effective results delivery which are seen as key success factors.

To ease the friction between having mature teams and immature teams, we recommend more collaboration and having a common goal across the startup company. By empowering the teams, the startup can enhance its competence and in return increase the company's value as a business asset.

## 5.2 Challenges in startups and entrepreneurship

The study partly aimed to investigate the challenges of startups and entrepreneurship. It was discovered that most of the challenges occur in the initial stages. The fundamental challenges faced by startups, which have been analyzed and itemized in the course of this research, are:

### **Continuity of agile practices**

Having a clear and organized structure within the startup is a challenge that startups and entrepreneurs face, especially in the initial stages. To create a common way of working, routines, and processes, are crucial for establishing a stable ground. Unclear goals and roles create confusion and inefficiencies within the team, leading to delays and misunderstandings. Having a clear and organized structure within the startup is a challenge that startups and entrepreneurs face, especially in the initial stages. To create a common way of working, routines, and processes are crucial for establishing a stable ground. Unclear goals and roles create confusion and inefficiencies within the team, leading to delays and misunderstandings. Having clear goals, roles, and ways of working at the initial stages sets a strong foundation for the startup's growth and success by minimizing ambiguity and maximizing productivity.

### **Human resource management**

Another challenge is human capital mobility and retention, which is interconnected with financial challenges. Hiring employees poses a significant challenge for startups, particularly in the initial stages when resources are limited. Leaders should have experience in recruitment processes, as effective human resource management is crucial for the success of hiring employees. Although hiring employees is a challenge, it is essential to improve satisfaction and engagement among current employees. This could involve creating a positive work culture and providing opportunities for professional growth and development.

### **Lack of attention to changing markets**

One main challenge is the difficulty of delivering on time to customers. This has several reasons, but the major one is the need to constantly adapt to changing markets. For startups to keep up with rapid developments, it is important to be highly responsive and flexible to adapt to changing requirements. Effective communication and collaboration within the team and with stakeholders are crucial for the flexibility of the startup. Achieving this can be facilitated by using agile methodologies, which, according to Boehm's findings, assist organizations in quickly developing and changing their products to adapt to shifting market forces [7].

In addressing **RQ1**: *What are the primary challenges encountered by startups and entrepreneurs in achieving long-term success?*, we assert that the primary challenges include establishing a clear structure and ways of working, addressing financial issues, and fostering adaptability. To achieve long-term success, startups and entrepreneurs could consider adopting agile methodologies to address these challenges, which can lead to sustainable growth and success in the long term

### 5.3 Agile success factors for startups and entrepreneurship

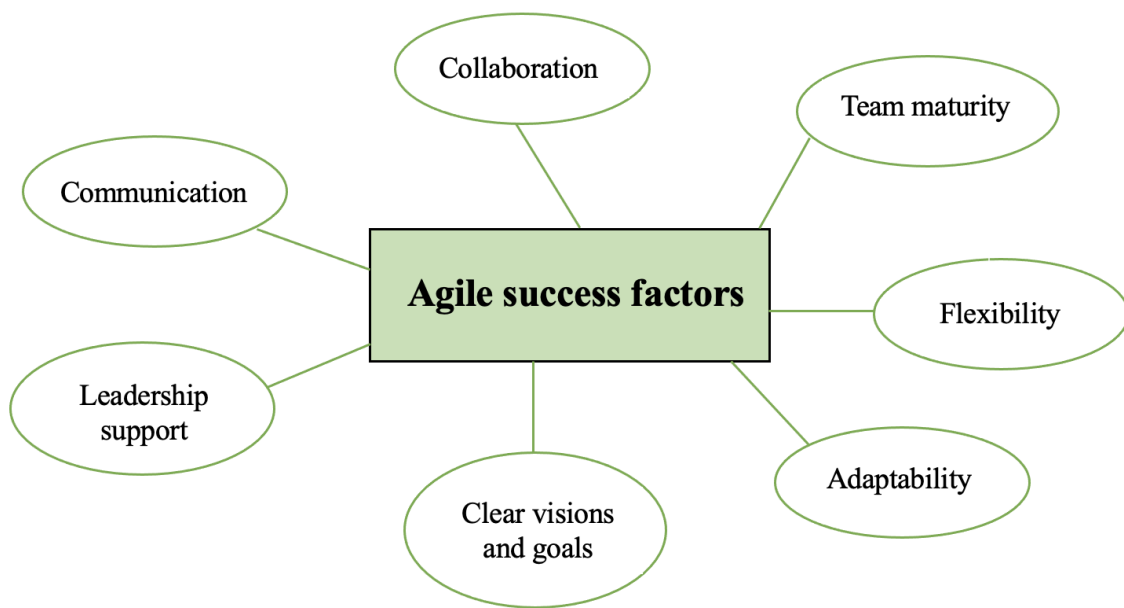
The study also investigated the success factors that can be adopted in the context of long-term agile success for startups and entrepreneurship. Our findings suggest that implementing more agile ways of working contributes to the success of startups. Our findings on success factors are similar to Chow and Cao's study. One critical factor for the successful adoption of agile practices is team maturity. A team with a high level of maturity is more capable of collaborating and self-organizing. These teams are aware of their responsibilities and manage their work effectively, fully maximizing the creative capacities and motivation of the team. Key factors for self-organizing teams include well-defined goals and objectives, as these are essential for decision-making and the team's adaptability and responsiveness to the fast-changing market.

Another agile success factor is leadership support. Leaders play a pivotal role in fostering an environment that embraces agile methodology. This includes promoting agile practices, ensuring alignment with the overall vision and goals, removing impediments, and supporting the team by encouraging open communication and collaboration. Another critical factor for achieving long-term agile success for startups and entrepreneurs is flexibility and adaptability. The ability to quickly adapt to changes and customer needs is essential for a startup's success and growth. This involves implementing iterative development cycles and continuous feedback, which are inherent in agile methodologies.

Furthermore, our findings provide insights into the potential challenges of adopting agile methodologies, as they do not apply to all types of startups and entrepreneurship. For startups that often require attention to legal or industry standards that dictate certain processes or documentation requirements, agile practices may not

always be suitable. The iterative approach will not be as suitable as, for example, the step-by-step approach of the waterfall.

In addressing **RQ2**: *How can agile methodologies be effectively adapted in startups and entrepreneurial ventures to achieve long-term success and growth?*, we suggest that startups and entrepreneurs follow the factors that are presented in Figure 5.1. These are our findings and they are all inherent in agile methodologies and can effectively be adapted to achieve long-term success and growth for startups and entrepreneurship.



**Figure 5.1:** Agile factors for long-term success startups and entrepreneurship

## 5.4 Agile leadership for startups and entrepreneurship

The study furthermore investigates the applicability of agile leadership for startups and entrepreneurship. The research involved determining if organizational culture and leadership can be improved by adapting to agile practices and leadership principles. Our findings suggest that implementing agile leadership principles in startups could enhance overall work towards the startup's goals and achieve success. Leaders provide feedback and guidance, which helps to keep up with the fast-changing market. Upon discovering that several employees at startups had previously worked for larger companies, we considered Bakker's statement that engaged workers perform better than non-engaged workers. Although their research focused on engaged workers, we consider that employees with experience know how to actively adjust their work environment to sustain engagement. According to research from Deloitte University Press, culture, and engagement rank as one of the foremost challenges for organizations. Based on our findings, these can be improved with agile leadership

principles.

Some agile leadership principles may be less applicable, especially for startups where the number of staff in the organization is low. In such cases, decision-making may be challenging due to the abundance of leaders. There cannot be an imbalance between the number of leaders and employees. While having multiple leaders can foster collaboration and distributed decision-making, it can also result in challenges such as unclear roles and conflicting priorities.

In addressing **RQ3**: *What are the roles of organizational culture and leadership in startups and interplay in long-term agile success?*, we assert that organizational culture and leadership play pivotal roles in driving long-term agile success for startups. To strive for long-term agile success, startups must carefully navigate the interplay between organizational culture, leadership effectiveness, and agile principles. By fostering a culture of collaboration, transparency, and adaptability, and aligning leadership practices with agile principles, startups can overcome challenges and leverage opportunities.

## 5.5 Suggestion for future work

Based on our study, we have identified areas where future work and research can be conducted. One avenue for future work involves focusing on specific industries individually rather than taking a generalized approach. Our study encompasses startups and entrepreneurship across various industries. Delving deeper into a specific industry could yield valuable insights for achieving long-term agile success tailored to each industry's distinct characteristics.

Another potential area for future research centers on the utilization of feedback mechanisms for process improvement within startups and entrepreneurship. Investigating how startups can effectively leverage continuous feedback to refine their processes and enhance their services could offer practical strategies for fostering innovation and growth.

Additionally, there is a need for research into the effective modeling of rapid iteration processes within startups and entrepreneurship. Understanding how to optimize iterative approaches to product development and business operations can be crucial for startups striving to adapt quickly to changing market demands and customer needs.

Furthermore, future research could focus on a specific implementation of agile methodologies, such as Scrum or Kanban, within startups and entrepreneurship. Exploring the nuances of how these methodologies are applied in practice and their impact on organizational efficiency and effectiveness could provide valuable insights for startups and entrepreneurs seeking to adopt agile practices.

## 5.6 Threats to validity

Threats to validity include several factors that may impact the accuracy and reliability of the study's findings. There is a possible risk that the interview results in the study may to some extent not reflect reality as a result of human factors. One possible example is that a member of staff of a startup may not freely speak during the interview due to concerns about confidentiality. Another risk is that founders or staff of startups could not have been completely truthful due to presenting a favorable image of the startup.

Furthermore, a possible threat to this study could be the limited sample group. Findings regarding founders of startups may be subjective as what one finds as a flaw may be seen as a success factor by another person. If studies are conducted just on certain groups or departments then the findings may not apply to the company as a whole. Leaders and team members' roles may have varying definitions and responsibilities across different startups, potentially influencing the outcomes of studying a specific aspect.

We also face the risk of measurement bias, especially if the researcher's interpretation is influenced by the study results. An example could be if the researcher has preconceived ideas of what the structure, and processes in a startup should be like, such researcher may unconsciously interpret the results in a manner that confirms their personal beliefs. Potential misinterpretation of the contexts of the case study is another threat to the validity of the research. Lack of thorough understanding of the nuances and intricacies of the startup environment increases the risk of misinterpreting the findings.

# 6

## Conclusion

Startups and entrepreneurship are critical elements to the success of many economies. However, the early adoption of agile methodologies among such startups could result in an unclear focus. This study is based on the adaptability and applicability of agile methodologies concerning the long-term success of the company. With the help of qualitative interviews for data collection and analysis, this paper has provided valuable insight into challenges that arise in startup companies and how agile can be adopted to overcome them for long-term success. Part of the findings in this study is that any agile framework that is adopted could serve as a potentially suitable approach to the long-term agile success of startups. With the adoption of agile, teams can improve organizational culture, better delivery strategy, collaboration, have faster turnaround time to market, and also have mechanisms in place for implementing customer feedback. In conclusion, agile principles and values have been proven to be highly effective in the concepts of startups and entrepreneurship.



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# A

## Appendix 1

### A.1 Introduction to interviews

Welcome to this interview on the subject of long-term agile success for startups and entrepreneurship. The purpose of this interview is to delve into aspects such as the impact of leadership and the potential contributions of agile practices to long-term success in startups and entrepreneurial ventures.

We appreciate your input and value your privacy. Please note that any information you provide during this interview will be treated with the utmost confidentiality and anonymity. While we will refer to your role (such as CEO or software developer) when presenting the results, your responses will not be linked to your identity or company and will only be used for research purposes. Please feel free to share your thoughts and experiences openly, as they are important to our understanding of the topic. We would like to ask for your permission to audio record this interview for transcription purposes. The audio recording will not be shared with anyone and will be deleted once the report is finalized.

By participating in this interview, you are contributing to our understanding of how startups can effectively leverage agile practices to achieve sustainable success over time. In recent years, agile methodologies have primarily been utilized by software companies and for software projects. However, we aim to explore how the agile methodology can be adopted by any company, regardless of its innovation or size. We will use the following definitions of a startup and long-term:

- A company is considered a startup if its age falls between 0 and 2 years from the date of registration.
- Long-term success is considered as any company that has been in operation for 5 years.

With these definitions in mind, let's dive into the interview and explore how you can adapt agile methodologies to your startup.

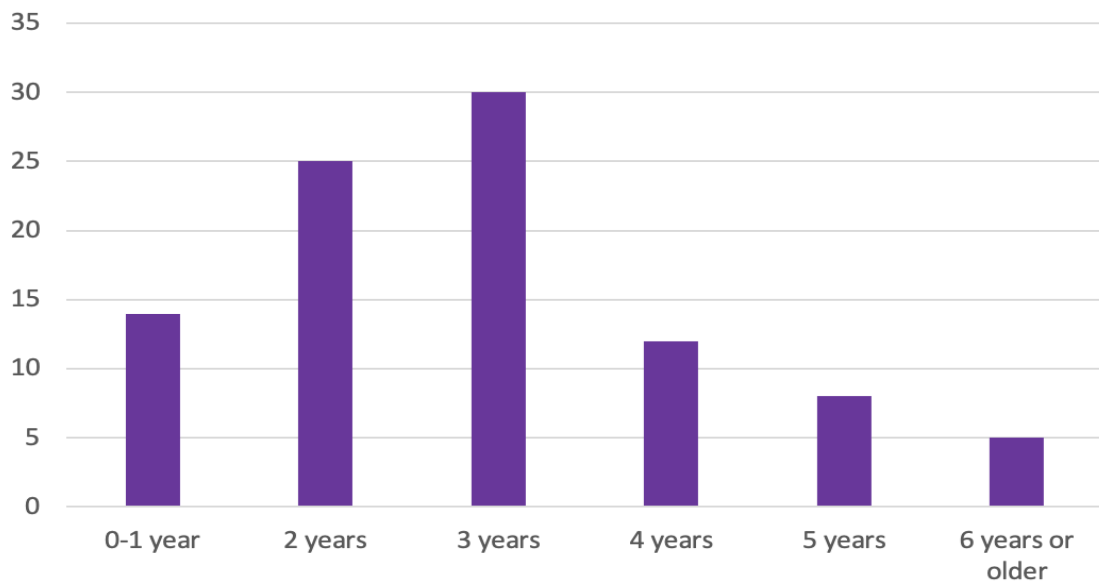


# B

## Appendix 2

### B.1 Survey questions and diagrams

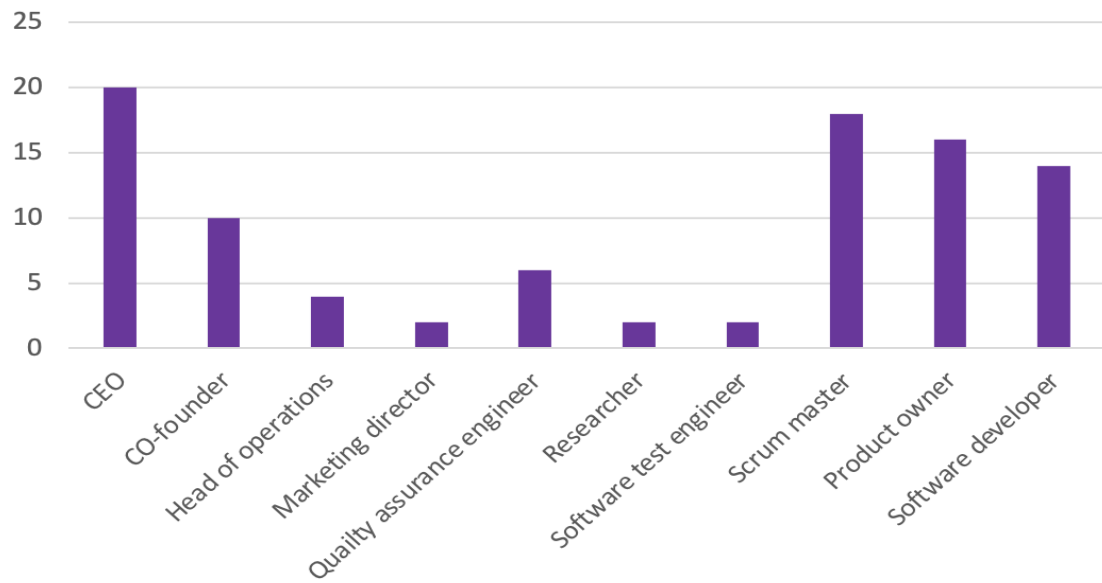
Q1: What is the age band of your company?



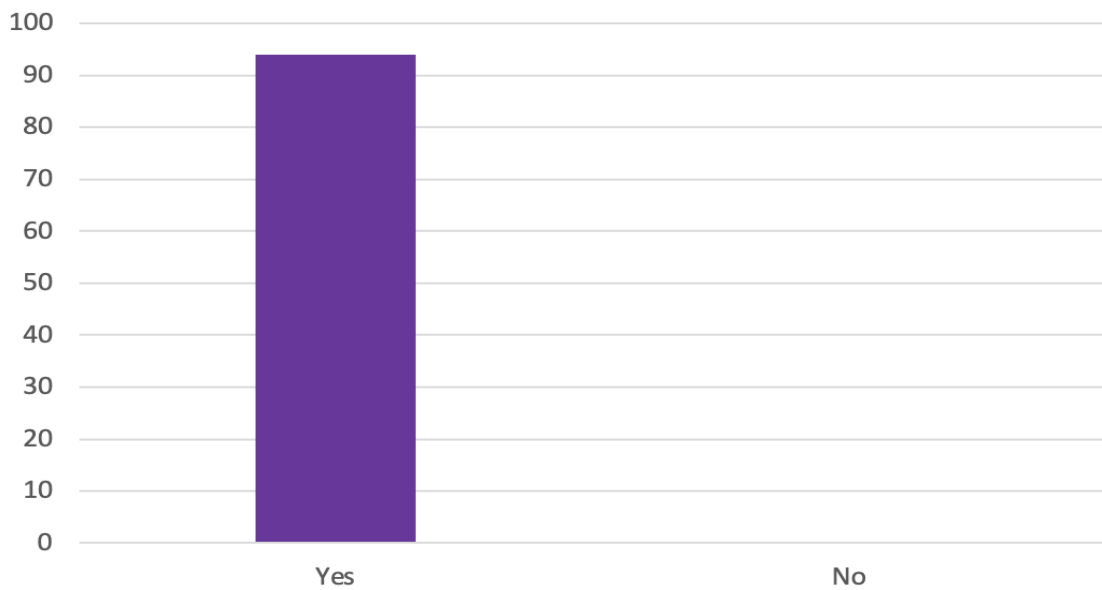
Q2: What is the number of staff in the company?



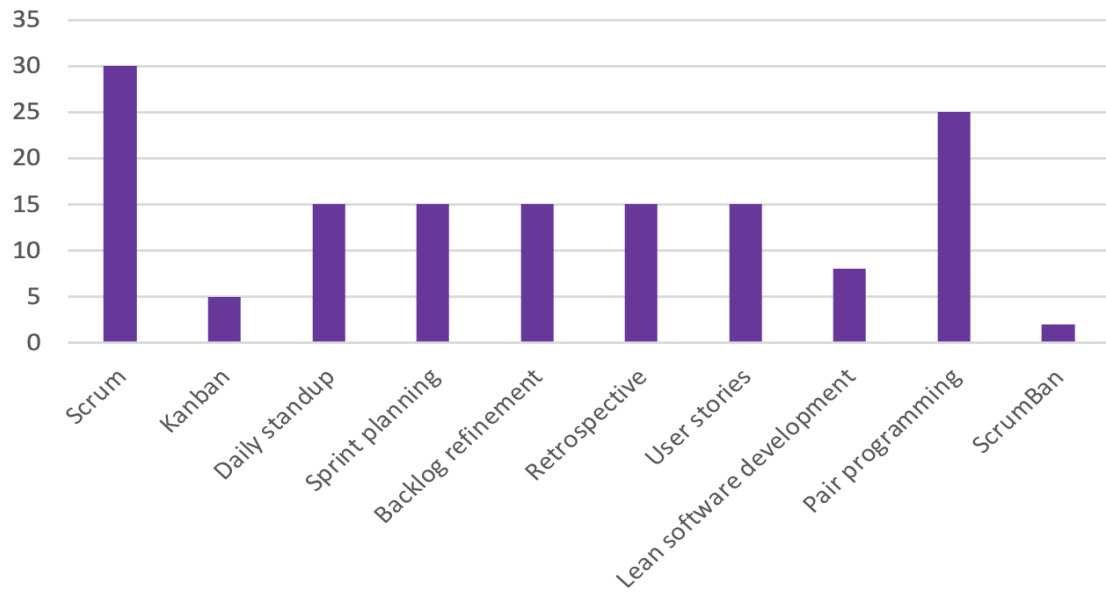
**Q3: What is your job role within the company?**



**Q4: Are you aware of agile methodology?**



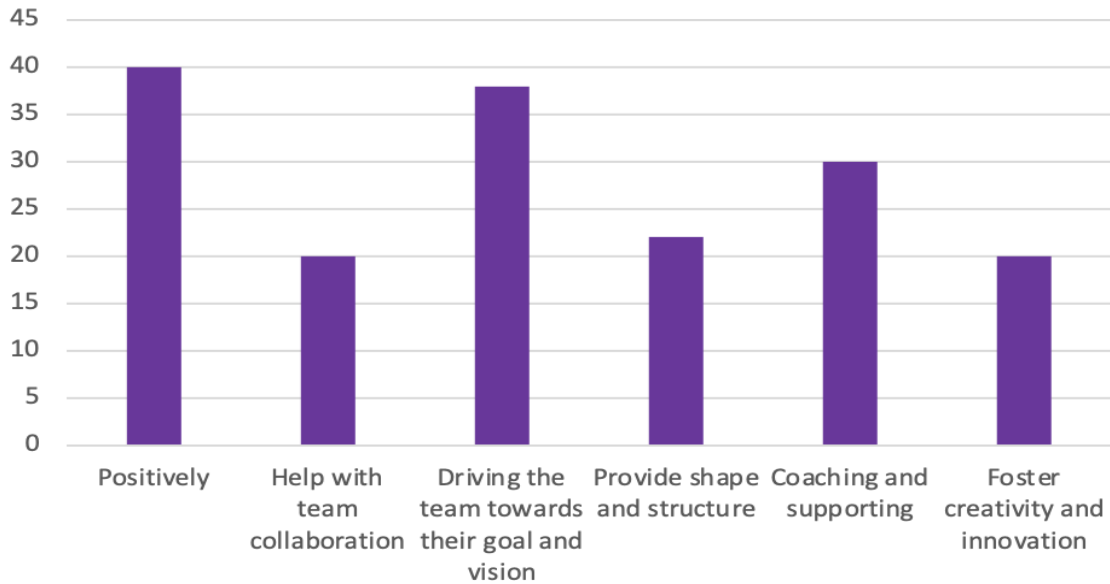
**Q5: Do you practice agile methodology in your company? If-yes, which of the following agile practices do you follow?**



**Q6: Which agile technical and software tools do you use in your company?**



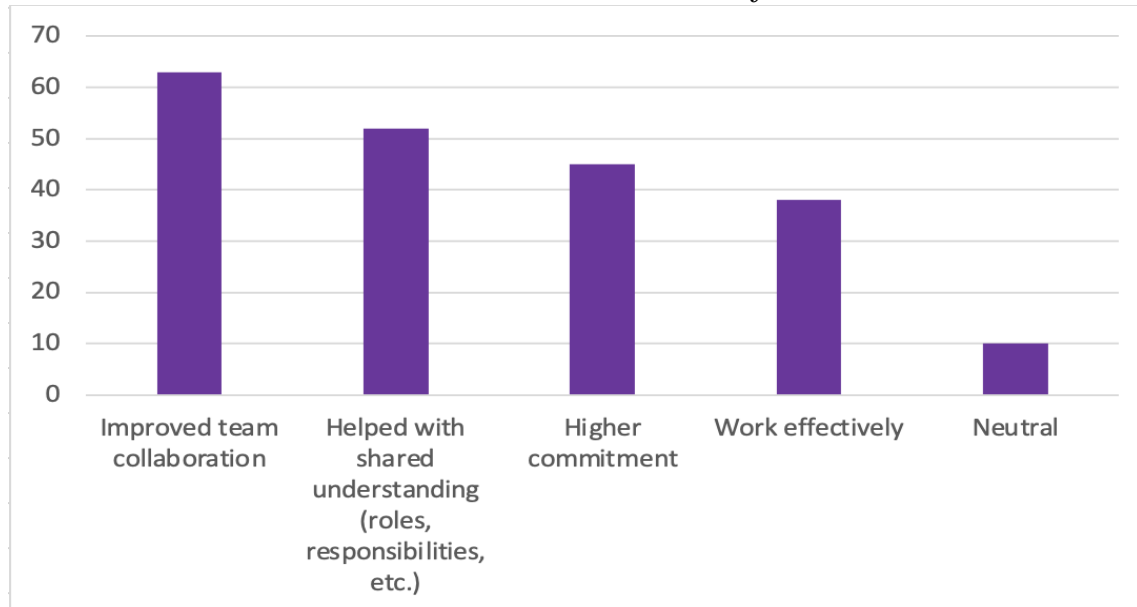
**Q7: How has the leadership within your startup, particularly in the context of its organizational culture, impacted your development, especially considering the limited number of employees?**



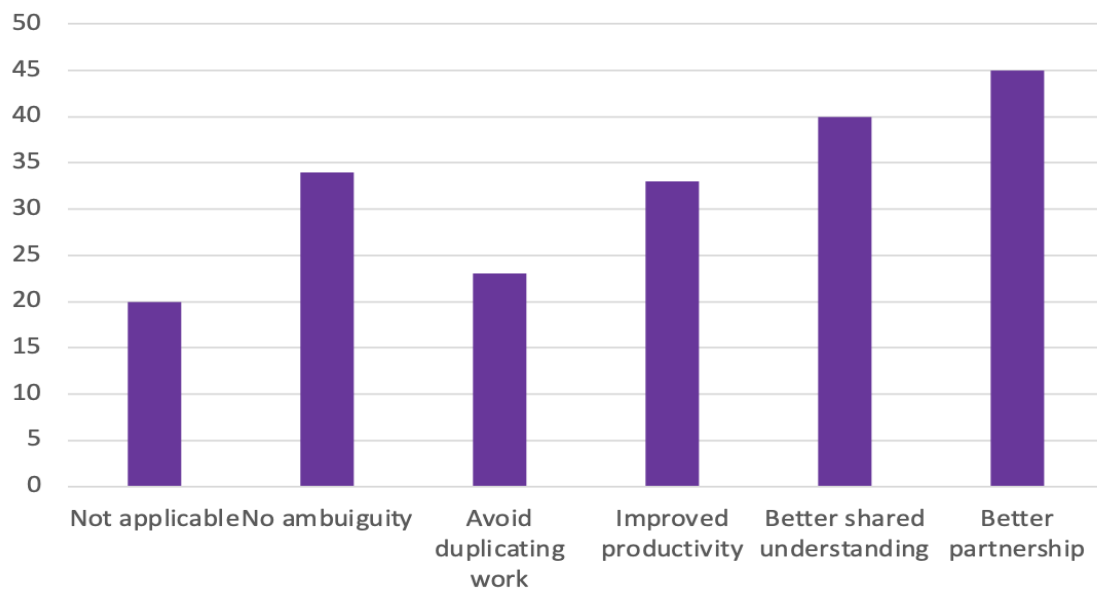
**Q8: In your opinion, can the adoption of agile leadership principles enhance the effectiveness of leadership in startups, making it more adaptable and conducive to success? If-yes, how?**



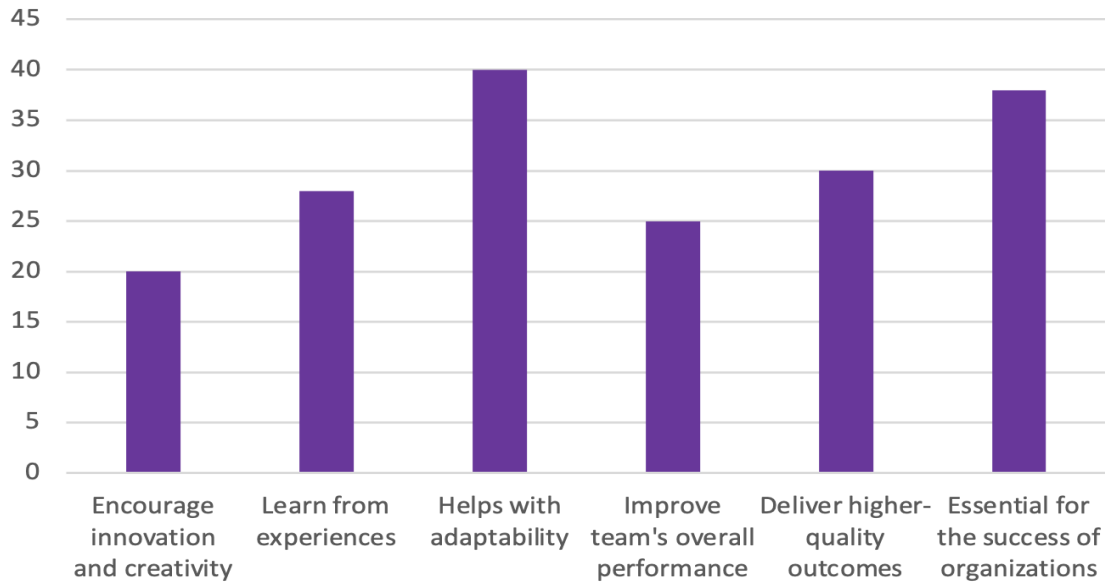
**Q9: In your daily work, how has your communication and collaboration within the team influenced the effectiveness of your work?**



**Q10: In your daily work, how has your communication and collaboration with others in the team influenced the effectiveness of your work?**



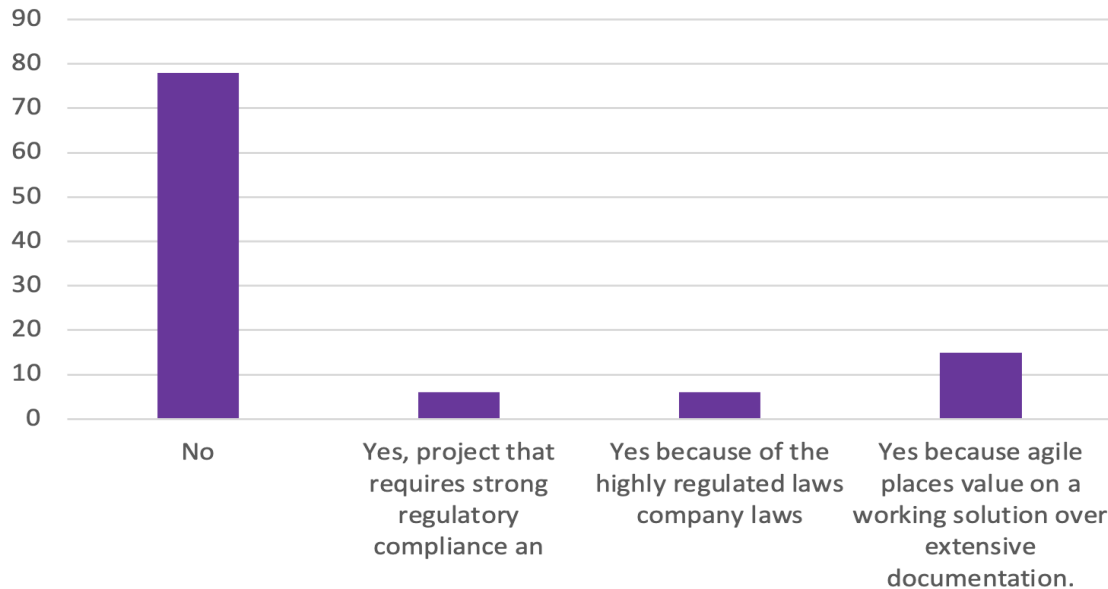
**Q11: How do you perceive the role of continuous feedback and iterative improvement, inherent in agile methodologies, in fostering a positive work environment and ensuring sustained success for your team?**



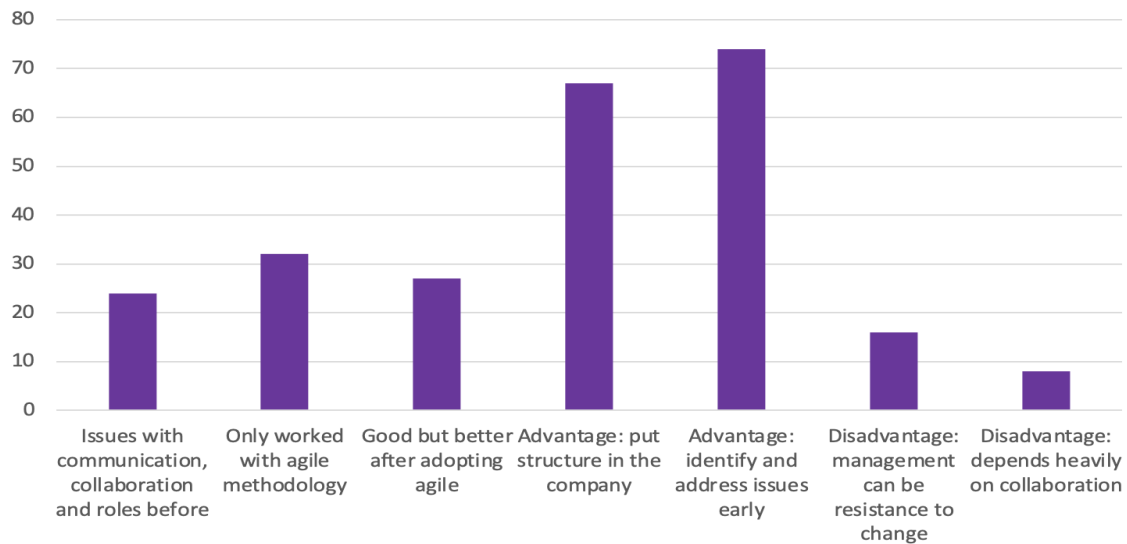
**Q12: Do you consider agile methodology to be beneficial or not to your company? If-yes, how?**



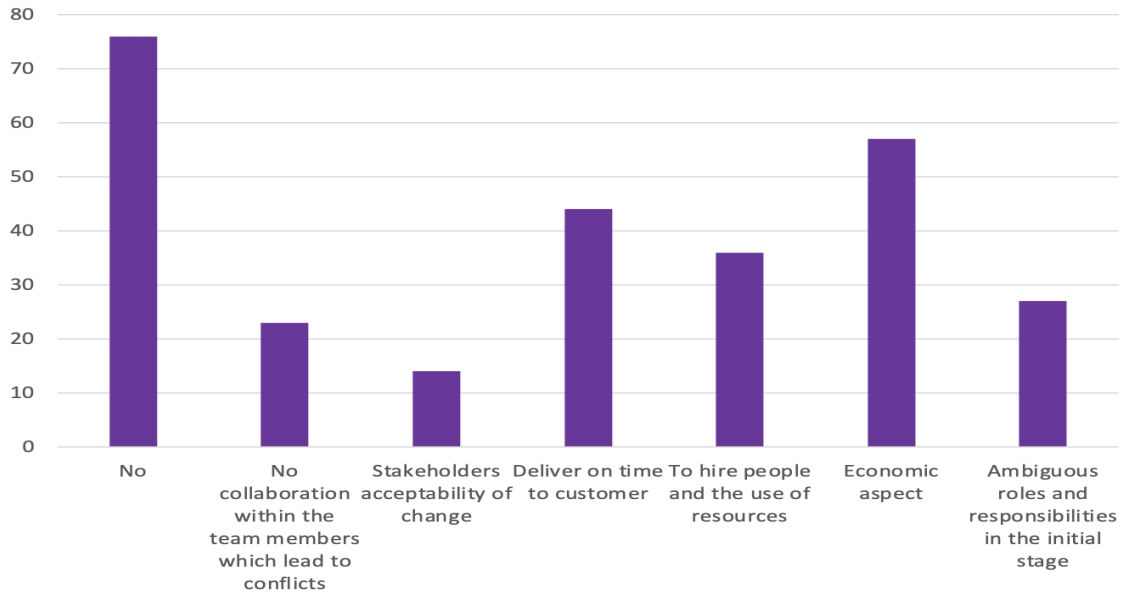
**Q13: On the flip side, are there any phases or moments where agile practices don't fit in?**



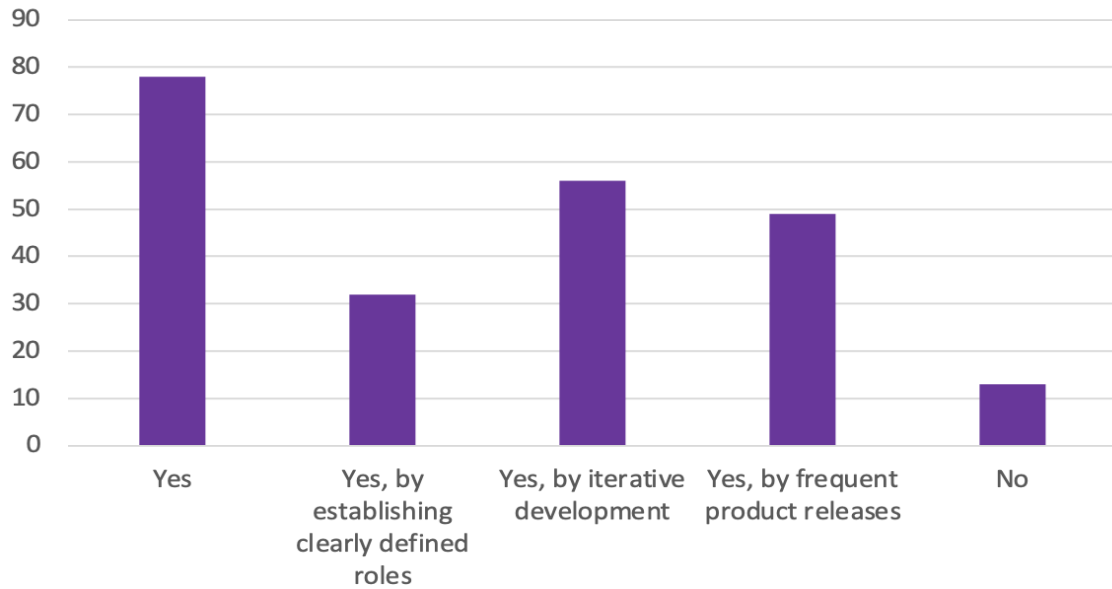
**Q14: How was the business before adopting agile methodology and after adopting agile methodology? What are the advantages and disadvantages of adopting agile methodologies?**



**Q15: Can you recall a situation in your startup where you counter challenges?**



**Q16: Do you believe that the agile methodology could assist you in addressing these challenges? If so, please explain how. If not, what alternative solutions do you propose?**



**Q17: Do you believe that the agile methodology contributes to the long-term success of startups and entrepreneurship? If yes, how?**

