GÖTEBORGS UNIVERSITET
HANDELSHÖGSKOLAN

Generative AI as a Tool for Swedish Startups

A qualitative study on how Generative AI can affect Swedish startups

***Authors*:**
Filippa Gyllensvärd, Knowledge-Based Entrepreneurship
Olivia Hiljegren, Knowledge-Based Entrepreneurship

Graduate School
Master's of Science in Knowledge-based Entrepreneurship
Supervisor: Daniel Ljungberg
SCHOOL OF BUSINESS, ECONOMICS, AND LAW AT UNIVERSITY OF GOTHENBURG
Gothenburg, Sweden 2023

Acknowledgements

We are proud to present our Master Thesis, which we have written during the last semester of our Master Programme in Knowledge Based Entrepreneurship at Gothenburg University, School of Business, Economics and Law. This project was created by Filippa Gyllensvärd and Olivia Hiljegren and during our joint exchange semester in Paris, fall 2022, an incredible curiosity and interest in Generative AI began to grow. We both have a great interest in innovation and entrepreneurship, which led to the fact that today, after a spring of hard work and high commitment, we have created an essay that we are both very proud of.

Apart from our hard work, this thesis would not have been possible without the help of others. We would therefore like to extend our gratitude to our tutor Daniel Ljungberg for guiding us through the semester with helpful feedback, but also to the four opponents that provided us with insightful opinions. We are also thankful to the participants who took time to be interviewed and provide us with valuable empirical material for this research. Lastly, we would like to thank our family and friends for their support throughout the process and our entire university studies.

University of Gothenburg, School of Business, Economics and Law.
Gothenburg, 29th of May 2023.

Filippa Gyllensvärd

Olivia Hiljegren

Abstract

In today's rapidly evolving technological landscape, startups are constantly seeking new ways to innovate and stay ahead of the competition. One promising innovation is Generative AI, which uses large datasets to generate original content such as images, music, code, or text (McKinsey & Company, 2022). Generative AI has the potential to significantly impact startups in various areas such as prototyping development, benchmarking, marketing, content creation, and business analysis. However, successful implementation of Generative AI requires entrepreneurs to have strong social skills, broad networks and a flexible business model.

This thesis examines the challenges, opportunities, and application areas of Generative AI for Swedish startups. The research questions focus on how Generative AI can affect startups by identifying application areas, examining potential challenges, and exploring opportunities. The research employs a qualitative approach using purposive sampling, and interviews were conducted with four individuals from small, mid-size, and large companies. Thematic analysis was used to identify the application areas, challenges, and opportunities of Generative AI for startups.

The research findings suggest that Generative AI can significantly impact startups in various areas such as prototyping development, benchmarking, marketing, content creation, and business analysis. Theoretical implications include contributions to AI and entrepreneurship, social capital and entrepreneurship, and responsible AI adoption. Practical implications recommend startups consider adopting Generative AI but approach it with a thoughtful strategy. Future research recommendations include exploring the social and ethical implications of Generative AI for startups and improving the quality of Generative models.

In conclusion, this research highlights the potential benefits of Generative AI while also acknowledging the challenges that startups may face when implementing this technology. By understanding the implications of Generative AI, startups can make informed decisions about whether and how to adopt this innovation to drive their growth and success.

Keywords: *Generative AI, Startup, Entrepreneurship, Innovation, Thematic analysis, Machine learning.*

Table of Contents

1.

Introduction

This chapter provides the background and context for the thesis, including the problem statement and purpose. It outlines the background of the research and the issues to be explored. The purpose of the research is then discussed, highlighting the need for further investigation into the topic. Last, the academic contribution is presented.

1.1 Background

New innovations and technologies constantly change our world by creating new and destroying existing markets (Christensen & Bower, 1996). Smaller companies with fewer resources now manage to challenge the incumbent businesses with the help of new technologies resulting in the disruption of whole markets (Christensen et al., 2016). But how could that be?

The emergence of startups in Sweden has been a crucial factor in the development of the Swedish economy, with evidence of a continual increase in the number of new firms over the last centuries (Ekonomifakta, 2021). As technologies such as Artificial Intelligence (AI) continue to progress, it enables the development of more convenient applications that improve efficiency for business. Search engines are developing towards answer machines where the user wants quick answers without having to find information themself, the use of services like Apple's Siri is being more used than ever before (Frase, 2019). AI is now an integral part of many companies' tools, and as it develops, the technology has great potential to also streamline startups in its complex and versatile progress (Norlén & Selander, 2021). Large Generative AI models, LGAIMs, have advanced from AI and are capable of creating human-like text (e.g., ChatGPT), images (e.g., DALL·E 2), videos (e.g., Synthesia), and art (e.g., Stable Diffusion) (Hacker et al., 2023). However, through LGAIMs, companies can allocate resources to other areas, and tasks relying on human employees can be replaced by technology (Ivanov, 2019). Chandel (2018) argues that human competence will probably never be completely replaced by machine learning and AI, but by integrating the technology within digital communication, processes can be utility oriented and efficient. With the help of AI and machine learning, the management team can therefore focus more on areas that require human competence and presence (Chandel et al., 2018).

Chatbots are just one of many technologies that evolved from AI and machine learning (Haque et al., 2022). During 2022 and the internal phase of 2023, the new toolkit for reinforcement learning research has reached the corporate landscape, namely Chat GPT.

Entrepreneurs certainly see great potential in the technology and its future effect on employee management, in terms of relocation of employees and fast-paced production of written material (Haque et al., 2022). However, we are currently at an early stage for this particular technology, and its impact on corporate efficiency can be hard to measure. Therefore, it is interesting to investigate how Generative AI may offer startups the potential to challenge established firms and gain a competitive edge through the new technology.

1.2 Problem discussion

In history, new innovations have drastically changed our society. As an example of this, Henry Ford's introduction of mass production disrupted and transformed the whole automotive industry (Batchelor, 1994). The shift in production methodologies led to reduced costs, increased efficiency, and wider accessibility for consumers, but it also resulted in job losses and gains due to technological advancements. Technological development entails possibilities for firms to scale quickly, increasing the value for customers by understanding the implications and potentials of new innovations. As a result of the increasingly rapid pace and degree of technological development, businesses faced challenges to stay relevant on the market and adapt to the changes (Entrée Capital, 2022). Hence, new technologies provide both opportunities and challenges for Swedish startups. Previous research has shown how digital development, like the introduction of mass production, has opened new doors for ventures to scale quickly. This is often supported with the help of venture capital investments, but the effects that Generative AI can have for Swedish startups in the future is not sufficiently illuminated (Metrick & Yasuda, 2021).

One of the most critical challenges for all firms is to create a strategy for the future, since it is constantly changing and evolving (Vecchiato, 2015). In order to create competitive advantages, Vecchiato (2015) argues that firms should combine the first-mover advantages of new technologies or innovation as well as use strategic agility to create value through foresight. Startups can more easily respond to external changes, due to the smaller organization structures, and hence become more successful by embracing new technologies, such as Generative AI. Therefore, it's valuable for startups to understand the effects Generative AI has on their businesses (Metrick & Yasuda, 2021).

1.3 Purpose and research questions

The purpose of this thesis is to conduct a comprehensive analysis of Generative AI and explore its potential implications and opportunities for Swedish startups. This includes an analysis of the current state of Generative AI, associated possibilities and risks, and how it might shape the future of Swedish startups. It will further examine the potential impact of Generative AI on the Swedish startup ecosystem, including its potential effects on the ability of startups to launch successful products and services. Finally, the thesis will identify strategies for Swedish startups to maximize the potential benefits of Generative AI while minimizing its associated risks. In order to fulfill the purpose, the following research questions will be analyzed;

How can Generative AI affect Swedish Startups?

(1) In what application areas can Swedish startups leverage Generative AI?
(2) What challenges could Swedish startups face when implementing Generative AI?
(3) What are the potential opportunities for Swedish startups with Generative AI?

1.4 Academic contribution

This study will make an important academic contribution to the field of Generative AI as well as its applications areas, challenges, and opportunities for Swedish startups. Specifically, the study will help to further broaden our understanding of the opportunities and challenges associated with Generative AI technology, as well as its potential benefits and risks for Swedish startups. The study will provide empirical evidence on the potential of Generative AI to enhance the competitive advantage of Swedish startups and the challenges that they must address in order to leverage the technology successfully. Additionally, the study will contribute to the existing body of knowledge on the implications of Generative AI for global markets and industries.

2.

Literature Review

This chapter provides a theoretical background valuable to understand the effects Generative AI can have on Swedish startups in the future. First, Generative AI and Startups are defined followed by a presentation of literature on why startups fail. Later, theories on creative destruction, future predictions, and the hype cycle are presented.

2.1 Defining Generative AI

This thesis focuses on providing a comprehensive analysis of Generative AI and how it can affect Swedish startups, hence Generative AI must be defined to fully understand its potential for Swedish startups. Generative Ai is a part of the broad category of machine learning where large datasets are used to create, generate, or produce new and original data or content, such as images, music, or text (McKinsey & Company, 2022). According to McKinsey (2022), Generative AI technologies can be perceived as a transformative force similar to the Internets rapid development in the early 21st century. This technology has the potential to significantly alter the way businesses operate across various industries, as it enables the automation of tasks that were previously performed by humans. Consequently, Generative AI also has the potential to disrupt existing job markets and change the nature of work across many sectors.

Further, the possible application areas of Generative AI will be presented. Boston Consulting Group, BCG, (2023) estimates that Generative AI will be accountable for 30% of the AI market by 2025 by allowing AI adoption to significantly accelerate among businesses. BCG (2023) has summarized the usage areas of Generative AI for businesses into three categories; (1) Generating content and ideas, (2) Improving efficiency, and (3) Personalizing experiences.

The first category illustrates how businesses create new, unique outputs that can be used in advertisements, public relations, investor relations, or even come up with new business ideas together with accurate business plans for example. Generative AI can also be used to generate protein ideas based on desired properties specified using only text input. *The second category* explains how Generative AI can be used to improve efficiency by accelerating time-consuming tasks like coding, answering emails, or summarizing large documents. *The last category* includes the ability to personalize experiences by creating tailored content for a specific audience or target group based on customers' behavior (BCG, 2023). Generative AI has the potential to address a multitude of tasks beyond the scope of idea generation and content creation. Its applications extend to coding and enhancing operational efficiency, among other areas.

Entrepreneur (2023) highlights the benefits Generative AI has for smaller firms. It can, aligned with BCG's (2023) analysis, produce content, package designs, code, and identify errors quickly limiting the resources needed in labor, capital, and time. The delegation of streamlined processes, such as data analysis or document generation, to artificial intelligence, allows for the allocation of organizational resources towards higher-level projects, thereby enabling employees to direct their efforts towards tasks that contribute to the development of the company. This approach optimizes resource utilization while maintaining the capacity for organizational development (Entrepreneur, 2023).

2.2 Defining Startups

To further investigate how Generative AI affects Swedish startups, it's important to begin to define what a startup is. Startups are hard to define since researchers often find it challenging to precisely define the object of study. There are different definitions used by the media, researchers, governments, and professionals. Professor and serial entrepreneur Steve Blank's definition of a startup is often referred to in business schools around the globe and states a startup as follows; *"a temporary organization designed to look for a business model that is repeatable and scalable"* (Blank & Dorf, 2012). Cockayne (2019) states that one thing all startups have in common is their ability to grow, aligned with Blank's (2012) definition, while Wasserman. (2012) explains how the failure rate of entrepreneurs' businesses is high. Others highlight the youth and small size of the company as well as the high costs and limited revenues (Investopedia, 2022). As a result of the limited resources, startups often need to look for further investments to expand the business and hence tend to sell out parts of the company early as compensation for the investment (Investopedia, 2022). Forbes (2022) on the other hand separates startups from other companies by their speed and growth. They state that startups aim to scale the business quickly, often by iteration, a process where the development and improvement of the product are based on feedback and usage data from a minimal viable product (MVP). The insights and feedback help the startup to develop and improve the product aligned with the current market needs, making startups more flexible than incumbents (Hill & Rothaermel, 2003). Forbes (2022) further argues that startups want to quickly expand their customer base to take market shares to obtain competitive advantages.

Taken together, a startup could be defined as a young firm with the aim and possibility to scale quickly while the resources are limited and costs are high. In this thesis, we will focus on both smaller and larger firms that have a high consumer focus, as well as the ability to quickly adapt and utilize new technologies and trends in the market.

2.3 Why startups fail

To comprehend how Generative AI can be used as a tool by startups, an investigation into the underlying reasons for the high failure rate among new firms will be presented, to ascertain the feasibility of utilizing Generative AI as a potential solution. Entrepreneur (2023) highlights the importance of understanding the underlying drivers that can affect efficiency and profitability to become, and maintain, a sustainable company. Hence, the understanding of the customer, trends, price points, features, and cost of operations will positively affect the business but requires a lot of resources. Pride (2018) presents the three F's of startup failure; (1) Founder failures, (2) Founding failures, and (3) Flawed business models. He states that all startup failure is rooted in one of the three F's that is illustrated in Model 1 and further discussed below.

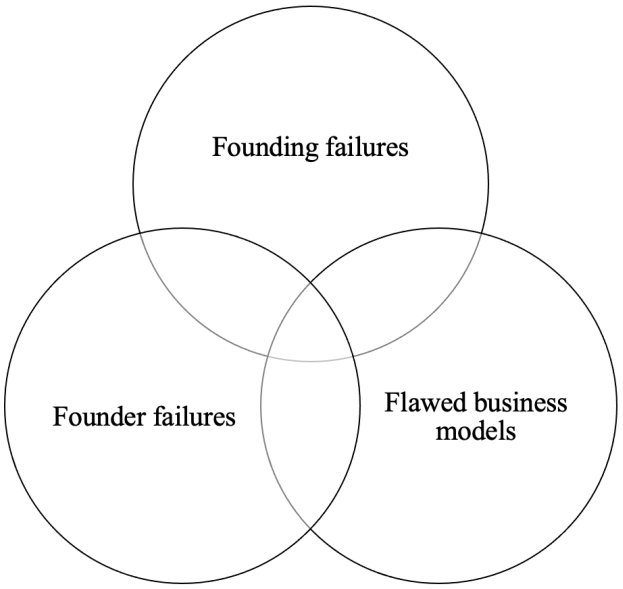

Figure 1: Illustration of the three F's of startup failure.

2.3.1 Founder's failure

The founder-driven failure refers to the capabilities of the founder and a well known situation is that building a business requires a lot of experience and knowledge, which many lack. The founder plays an incredibly important role within a startup and the success or failure is dependent on him/her (Pride, 2018). Wasserman (2012) explores the challenges faced by founders of startups and how these challenges can affect the success of the firm. Aligned with Pride (2018), Wasserman (2012) argued that the founder had a key role in decision-making, team building, fundraising, and relations management. Securing funding is a crucial stage in the startup process and entails making strategic decisions that involve trade-offs between relinquishing control over the company and accepting investments. According to Wasserman (2012), founders should adopt a transparent approach when engaging potential investors by clearly articulating the company's goals and strategies. Furthermore, founders should exercise

caution when accepting various types of funding and consider the long-term implications of such decisions. Startups have to manage relationships with co-founders, employees, investors, customers, and other stakeholders. Wasserman (2012) and Pride (2018) both highlight the importance of the founder to build a successful firm where the founder should be transparent and open to feedback and criticism to constantly align the firm to the existing climate of the market.

2.3.2 Founding failures

Startups are often described as engines of innovation and growth in modern economies. However, the reality is that many startups fail, particularly in the early stages of their development. One of the primary reasons for startup failure is a lack of funding (Pride, 2018). This can take many forms, such as running out of cash, being unable to obtain new investments, or selling shares too early in the company's development (Investopedia, 2022). One of the most common sources of failure is running out of cash, since startups require a significant amount of capital to get off the ground, and often, they are not generating revenue in the early stages of development. Hence, they tend to be dependent on external funding sources, such as angel investors or venture capital firms in order to avoid bankruptcy (Pride, 2018).

Investor-founder disharmony represents the problems associated with the lack of alignment between the goals and expectations of the startup founder and those of the investor providing funding for the startup. Pride (2018) describes how disharmony can fail startups as a result of different visions of the future, strategies, and knowledge. Some investors might hinder the startup from organically growing a sustainable business, as they expect a return on their investment in a short time frame. This leads to a prioritization of short-term returns.

2.3.3 Flawed business models

Pride (2018) highlights the difference between a good idea and a viable business plan. Entrepreneurs tend to heavily focus on the idea and hence not focus on the business plan that will turn the idea into a scalable and sustainable business. The business model outlines how a company creates, delivers, and captures value. Pride (2018) states that one primary reason for failure is flaws in the business model, more specifically the lack of understanding of the market or target audience. The lack of market research and analysis can result in an insufficient understanding of the target audience and their needs resulting in a business that does not meet the demand of the market (Pride, 2018). Nancy and Yuliya (2020) further highlight the importance of a well-defined and effective business model in terms of creating, and delivering value, securing funding, and sustaining growth. Hence, the business model of a startup is a crucial part of its value proposition, particularly in the context of attracting potential investors and providing a roadmap for generating revenue and achieving profitability over time.

The business model of a startup must be dynamic in order to adapt to changes in market conditions and ensure its survival. Startups that fail to adapt their business model to changing market demands, customer preferences, or new technological developments may be left behind by competitors which results in a loss of market share and potential revenue (Nancy & Yuliya, 2020). To execute the business model, the startup must have the right team with valuable experience, knowledge, and social skills (Pride, 2018).

2.4 Creative destruction

To understand how Generative AI can affect Swedish startups in the future, it's valuable to understand how new technologies have changed the market for business in the past. Creative destruction is a term introduced by economist Joseph Schumpeter to describe the process by which new technologies and business models disrupt and displace existing ones, leading to economic growth and progress (Aghion & Howitt, 1992). It refers to the constant changes in the economy, where new companies, products, and technologies emerge, and older ones decline and disappear. This process is driven by innovation and entrepreneurship, and it leads to improvements in efficiency, productivity, and economic growth. The term *creative destruction* emphasizes the idea that while the process of change can be difficult and painful, it ultimately leads to progress and development. It's a constant and ongoing process in capitalist economies, where the new replaces the old, and new opportunities arise for entrepreneurs and investors (Buenstorf, 2016).

In the context of entrepreneurship, creative destruction plays a crucial role in shaping the competitive landscape and providing opportunities for innovative startups. As new technologies and business models emerge, they have the potential to disrupt established industries and create new markets (Christiansen et al. (2015). Entrepreneurs who can identify and capitalize on these emerging trends often find themselves at the forefront of economic progress. Simultaneously, Generative AI, with its ability to generate original and innovative content, has the potential to act as a catalyst for creative destruction. By leveraging large datasets and algorithms, generative AI can automate tasks, generate new ideas, and even create entirely new products and services (Bushe, 2013). Hacker et al. (2023) also strengthen this argument by stating that this technology has the power to transform various industries by enhancing productivity, enabling personalization, and fostering innovation.

In the context of startups, Generative AI can have several implications for the entrepreneurial ecosystem as it can enable startups to develop innovative solutions with unprecedented speed and efficiency. For example, generative AI algorithms can assist in automating repetitive tasks, freeing up human resources to focus on more strategic and creative aspects of their business. This can give startups a competitive edge by enabling them to operate with leaner teams and faster development cycles (BCG, 2023). However, it's important to acknowledge that Generative AI and creative destruction also present challenges and considerations. The widespread adoption of generative AI may lead to job displacement and changes in the labor market. As tasks become automated, certain job roles may become obsolete, requiring

individuals to adapt and acquire new skills (Entrée Capital, 2022). Additionally, ethical concerns surrounding Generative AI, such as biases in data or the potential for misuse, need to be addressed to ensure responsible and beneficial use of the technology (Rana et al., 2021).

2.4.1 Disruptive innovation

Disruptive innovation is often seen as a specific type of creative destruction. The theory of disruptive innovation was first introduced in 1995 and has later become a way of thinking about innovation-driven growth, providing valuable insights for both big and small firms worldwide (Christensen et al., 2015). Christiansen et al. (2015) describe disruptive innovation as;

> *"a process by which a product or service takes root initially in simple applications at the bottom of a market and then relentlessly moves up the market, eventually displacing established competitors".* - Christiansen et al. (2015)

The authors argue that disruptive innovations are typically created by new market entrants or startups, rather than established industry leaders and that they often initially offer lower performance or functionality than existing products, but can improve rapidly and ultimately overtake established products in the market. Simultaneously, King & Baatartogtokh (2015), suggest that the full theory of disruptive innovation should only be applied when certain conditions are met, namely applications and consequences of that technology in particular contexts. To apply new kinds of technology, there must be a demand for changes in the market structure and global scope (Füller et al., 2022).

Christensen et al (2015) argued that economic growth is driven by waves of creative destruction, where new innovations disrupt existing industries and create new opportunities for growth. This process is not always smooth, as it can lead to job losses and economic dislocation in the short term. However, in the long run, the overall benefits of creative destruction are believed to outweigh the costs (Christensen et al., 2015). Aligned with Schumpeter, Autor (2015) believes that technological development will not result in the long term loss of jobs but rather the development of new ones. He states that the future jobs will most likely involve a collaboration between the machine and the human.

2.4.2 Exploration and Exploitation

Both creative destruction and disruptive innovations lead further into the scales between exploration and exploitation. Understanding how to exploit the many potentials of the new possibilities presented by disruptive forces is important to analyze, but also how they can be explored (Katz, 2002). This will contribute to the understanding of how Swedish startups can introduce Generative AI in their businesses in a valuable way to gain competitive advantages.

Exploration refers to the process of seeking out new opportunities, while exploitation involves maximizing the value of existing resources and capabilities (Stadler et al., 2014). Both the exploration and exploitation strategies encounter various challenges. However, there exist potential solutions to mitigate these challenges. The difficulty of balancing the investigation of potential opportunities and the utilization of pre-existing facts is one of the most fundamental conflicts that individuals and businesses continually grapple with. This issue originates from the point that gathering data and capitalizing on it are regularly two conflicting activities. These two can be seen as the two most distant procedures at the finishes of a ceaseless range. At one end of the range, an individual or framework that just investigates (i.e., gets data about its environment to upgrade future execution will pay the expenses of acquiring new data without picking up the advantages of information). On the opposite end of the range, an individual or framework that only misuses (i.e., solely utilizing existing information) will be deficient with regards to the capacity to adjust to huge ecological changes and may be caught in a sub-ideal dependable balance (Berger-Tal et al., 2014).

However, there are also logical solutions to the dilemma. By deeply inspecting the networks, Stadler et al. (2014) argue that researchers may be able to answer the difficulty of isolated exploration and exploitation while allowing the vital sharing of information and cooperation between them simultaneously. The authors conducted a comprehensive examination of structural, behavioral, systemic, and temporal solutions which corroborates that the learning field continues to wrestle with this concern. Combining structural elements of networks and social relations may help to explain how the present solutions can be applied successfully, how organizations can bring together different solutions, and how they can switch between them (Stadler et al., 2014). A technology-powered answer to compile and treat data in one spot can be applied to an unrelated good or service. This has also altered the approach of invention and R&D into a more spread out and open system, in which research and variation more and more take place across corporate edges (Berger-Tal et al., 2014).

2.4.3 Dark side of innovation

Innovation is often considered either good or bad. Rather than attempting to simplify innovation into a binary of good or bad, we should instead strive to understand the complexities of innovation and its many consequences. As Nelson (1962) stated, innovation is disguised by its direction and rate of change, both of which can produce negative and positive outcomes. Applicable to Generative AI, these outcomes are not always evenly spread. It is important to consider that these outcomes are based on the definitions of what's deemed good or bad. However, these definitions might not be generally and universally accepted. It can therefore be concerning if those in positions of power overlook the implications of these definitions and assume that innovation produces good outcomes with the need for careful consideration (Coad et al., 2021).

As AI continues to offer many advantages to our current society, there will also be potential drawbacks. It is essential to pay attention to the possible risks now in order to be adequately prepared to limit and control their effects. By focusing on the negative aspects, innovation can cause harm to society. Advances in technology, such as the spectrum of AI can lead to a loss of privacy and integrity, as well as excessive surveillance by both governments and corporations. Also, when computers and algorithms designed for AI are being trained, they can both intentionally and unintentionally create biases that amplify sexism or racism, which reflects different social inequalities. However, innovation can be portrayed as a virus that causes interference in the current landscape. In order to create stabilization of the virus, a vaccine must be available. Until the vaccine is available, many may die in the meantime, like companies that do not adapt to the new technology (Coad et al., 2021). According to Rana et al. (2021), one of the many reasons why AI can be considered harmful is because of the deviation of value. This means that when there is a difference between resources and practices, or between people involved, the value tends to decrease and cause disturbances among industries.

2.5 Predictions of the future

In order to understand how Swedish startups could be affected by Generative AI, it is valuable to investigate how the existing literature predicts the future. This will contribute to the understanding of the future, possible application areas, challenges, and opportunities.

Generative AI is a rapidly evolving technology that has the potential to revolutionize the way we interact with machines (Syam & Sharma, 2018). In 2013, Bushe (2013) predicted that we could expect to see increased capabilities in Generative AI, such as a better understanding of natural language, more accurate predictions, and improved creativity in the future. Today, 10 years later, these functions have been set into action and are constantly used in the corporate landscape as well as by civilians and the technology is currently disrupting the Internet at an escalating pace (Michelle & Gemilang, 2022).

Generative AI has the potential to be used to create, develop, and enhance products, services, and experiences, and will likely be used to automate more processes. We can also expect to see more widespread applications of Generative AI, such as in education, healthcare, transportation, and entertainment ((Mayahi & Vidrih, 2022). There are many application areas for Generative AI, and the technology is far from industry-specific. This brings the possibility for entrepreneurs and start-up companies to save time and resources, whilst improving the quality of our lives. By applying this fact to startups and entrepreneurs in general, Shepherd & Majchrzak (2022) predict a bright future. By integrating the technology into early processes in the company, it possesses the capacity to provide entrepreneurs with a more efficient way to better understand customer needs, automate operations, and generate more accurate insights from customer data (Shepherd & Majchrzak, 2022). Simultaneously, entrepreneurs can create new products and services faster and more efficiently by integrating Generative AI into their processes. 10 years ago, Bushe (2013) predicted to see an increased

use of Generative AI in the startup and entrepreneurship ecosystem, as it would become more accessible and cost-effective in the future. When AI first began to be integrated, mixed emotions and feelings evolved as the new technology potentially threatened the demand for human resources and employees. Over time, this went from being seen solely as a threat and instead being seen as a competitive advantage as companies instead can educate and relocate their human resources and focus on maximizing their capacity (Mayahi & Vidrih, 2022).

The importance of previous implications is necessary to consider when assessing future opportunities and challenges. One crucial component of any company's process is marketing and the creation of visual content (Sterne, 2017). Future predictions from Mayahi & Vidrih (2022) are that AI will be developed to replace not only text productions but also creative activities in design processes to meet the customer's demand. As of today, technology is being used to create images, logos, product designs, and packaging designs. However, in the future, the authors believe that it can be used for leveraging both the creative stages, but also administrative tasks. This will let the designers focus more on the creative aspects of the design process and use it for inspiration purposes. In this stage of the process, the designers can use the tool as a creative partner and help them meet the shifting demands (Sterne, 2017). Over the next few years, Generative AI will become a revolutionary and well-trained tool that effectively provides insights rapidly, like a skilled employee. Today, the technology lacks accuracy and reliability, due to the high dependency on human inputs and should therefore not be used for full replacement of human resources, but rather as a time-efficient tool (Mayahi & Vidrih, 2022).

To understand Generative AI's upcoming opportunities, challenges, and application areas for Swedish startups, it's important to investigate predictions about the future to understand how startups can leverage, with support from the technology. Vecchiato (2015) explores how first-mover advantages and strategic agility can be a source of value creation for organizations. The term first mover advantage is explained as the ability to create competitive advantages by being the first to enter a new market or adopt a new technology. Strategic agility is described as the ability to quickly and effectively respond to external changes. The author states that strategic agility and first-mover advantages can be used to create value through foresight, as they can predict and respond to changes in their environment (Vecchiato, 2015). Vecchiato (2015) concluded that organizations can use the combination of first-mover advantages and strategic agility to create value through foresight. Thus, organizations that effectively respond to external changes have the potential to become more successful. By taking advantage of first-mover advantages and strategic agility, organizations can gain a better understanding of their market, create new products and services, and increase their profitability (Vecchiato, 2015).

On the other hand, there are also first-mover disadvantages that are important to discuss when predicting the future and pioneering businesses. First-mover disadvantages with Generative AI refer to the risks associated with being an early adopter of AI technologies. As Generative AI is still a relatively new technology, several unknowns may lead to costly mistakes. These include potential security risks, lack of established best practices, potential for inefficient use

of resources due to lack of experience, and lack of scalability and competitive advantage (Klusak et al., 2022). Additionally, if a company is the first to use Generative AI, it may have difficulty recruiting employees with the necessary skills to support the technology. Furthermore, there may be a lack of access to quality data sets, leading to a lack of accurate insights into how the technology is performing (Bilodeau et al., 2022).

2.6 Hype Cycle

To understand the evolution of Generative AI and its effect on Swedish startups, the hype cycle will followingly be presented. This will contribute to a better understanding of the adoption of the technology to understand its effect on Swedish startups.

The Hype Cycle was first coined in 1995 by the research company Gartner, namely the analyst Jackie Fenn and is widely used within the technology industry to help understand the adoption of new technologies. The purpose of the model is to describe the standard adoption for new technologies, and it presents the different stages and processes that new technologies go through. It provides a visual representation of the typical patterns of adoption and implementation of new technology or innovation, such as the emergence of inflated expectations followed by a period of disillusionment, before the technology eventually reaches an "ascendancy" stage of acceptance and practical use (Vashisth et al., 2019). The cycle consists of five stages presented below and illustrated in figure 2.

1. *Technology Trigger:* The initial introduction of new technology, often with high expectations and excitement.

2. *Peak of Inflated Expectations:* The technology receives a lot of media attention and hype, often leading to unrealistic expectations about its potential.

3. *Trough of Disillusionment:* The technology fails to meet the exaggerated expectations and disillusionment sets in, leading to a decrease in interest and funding.

4. *Slope of Enlightenment:* The technology begins to find its place and usefulness, leading to more practical and realistic applications.
5. *Plateau of Productivity:* The technology is widely adopted and used in everyday applications, becoming part of the mainstream.

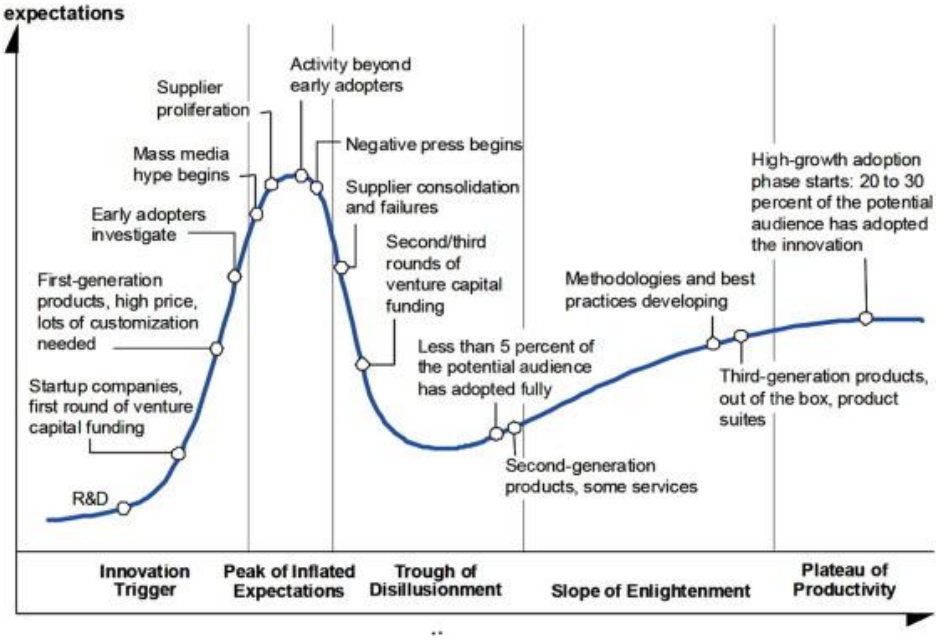

Figure 2. The hype cycle and its stage indicators (Dedehayir & Steinert, 2016).

The bell-shaped curve of the hype cycle is attributed to the common occurrence of a sudden and excessively positive response when a new technology is introduced. This can be explained by human heuristics, as individuals often approach a new technology with enthusiasm. This tendency is partly influenced by media coverage, which often focuses on potential breakthrough stories rather than critical analysis (Dedehayir & Steinert, 2016). Once early adopters experience the initial generation of the hyped technology, they frequently encounter disappointment, leading to a decline in hype and a shift in media coverage towards a more negative perspective. Following the decrease in hype, the technology typically regains attention as further advancements are made. Consequently, the Hype Cycle graph serves as a tool to analyze the progress of Generative AI, mapping its trajectory from initial excitement to eventual widespread utilization in the future (Vashisth et al., 2019).

3.

Methods

This chapter outlines the methodology applied in the fulfillment of the thesis's purpose. It discusses the advantages and disadvantages of the current approach and outlines the procedure for data collection and analysis. Followed by an evaluation of the limitations of the study and discuss the validity and reliability of the results.

3.1 Method approach

In order to provide a comprehensive analysis of Generative AI and its effects on the Swedish startup scene, this thesis will focus on qualitative data in order to generate valid and reliable results. The reasoning behind this strategy is that Generative AI is a relatively new phenomenon, both in practice, but also within academic literature. This is usually associated with qualitative studies due to their more in-depth characteristics (Scribbr, 2021). An explorative approach will therefore be required to provide a time-relevant and up-to-date analysis of the subject.

Qualitative research is an approach that focuses on understanding the meanings, concepts, and definitions that people associate with different topics compared to a quantitative approach which focuses on gathering and analyzing numerical data (Patel & Davidsson, 2011). A qualitative approach to this topic offers the potential to gain an in-depth understanding of the topic since Generative AI is a new phenomenon both in practice, but also academically. This requires a more explorative approach which usually is inked with qualitative studies and their in-depth capacities. A qualitative approach may provide a more comprehensive understanding of the subject, as argued by Patel & Davidsson (2011). Further, Patel & Davidsson (2011) argues that quantitative methods can provide a more objective and precise way of measuring and analyzing data, allowing for more accurate and reliable results.

3.2 Data collection

Both qualitative and quantitative approaches can be useful when analyzing Generative AI or any other natural language processing model. Qualitative analysis involves examining the output in a more subjective and interpretive way, such as analyzing the efficiency on a corporate level. At the same time, quantitative analysis involves collecting and analyzing numerical data about the performance and efficiency of the innovation. As touched upon earlier, this qualitative analysis comes with several limitations when analyzing new

phenomena, such as Generative AI since there's a lack of academic literature (Patel & Davidsson, 2011). This approach is crucial to examine the quality of the output and how well it responds to various inputs. By using a qualitative method, the authors can triangulate the findings by providing more robust and reliable findings as well as provide a more complete understanding of the potential effects Generative AI can have on startups, but also how it can disrupt industries or processes in the future. This can be especially useful when evaluating the effectiveness of a natural language processing model, but it can be challenging to fully capture the complexity and nuance of human language by using only quantitative methods. (Haque et al., 2022)

3.2.1 Primary data collection

To investigate Generative AI as a tool for startups, this thesis will partly involve a study of the technology and its application areas in order to understand the features of the technology. Simultaneously, it will also investigate the opportunities and challenges associated with the technology.

The study will rely on data collected from interviews with individuals with expertise within the field. Bryman et al. (2022) highlight the importance of the sample size and characteristics such as demographics since they have a significant impact on the accuracy of the results. Hence, the respondents will be carefully chosen with purposive sampling to ensure that it accurately reflects the population and provides valuable data. Since Generative AI is relatively new to many businesses, it can be hard to find respondents with the right experience for this research. Hence, the number of respondents could be seen as quite low, but the value of their experiences is high and helps the study fulfill its purpose. However, in order to protect the respondents integrity, neither their name nor their company name will be exposed. To create a flow and better understanding, the respondents company name will be replaced with Company X, and their real name will be replaced with a fictional name starting with the same letter as the fictitious company name. The table below provides an overview of the respondents in this research. Together with their fictive name and company name, their position is presented. Their knowledge about- and relation to Generative AI is presented as professional (uses Generative AI in their day-to-day work) or expert (Possesses extensive knowledge of- and mainly works with Generative AI).

Company	**Name**	**Position**	**Relation to AI**
Company A	*Anders*	*Founder*	*Professional*
Company B	*Beatrice*	*AI Change Agent*	*Expert*
Company C	*Casper*	*Freelance photographer*	*Professional*
Company D	*Doris*	*Partner Business Manager*	*Expert*

Table 1. Respondents from the data collection.

To collect valuable data to answer the research questions, four interviews have been conducted. The primary data is crucial to understand the current application areas, the implications of the technology as well as the many opportunities it can provide for startups. Primary data allows the researchers to collect data that is specific to the research topic and provides a basis for the researcher to make conclusions and draw valid inferences from the results of the research (Bell et al., 2022). Based on the limited time frame of the study and lack of previous research, this study has been confined to the Swedish start-up scene. As the topic is relatively new and complex, it has been difficult to collect a larger number of interviews. However, to produce a generalized result, the researchers chose to not decide on a set number of interviews. Instead, the interviews continued until similar stories, themes, and topics were consistently appearing. This indicated that the sample size was sufficient for generalizability, although only four interviews were conducted.

Purposive sampling is a sampling technique where the respondents are selected based on specific criteria that could maximize the likelihood of obtaining relevant information about the sample (Patel & Davidson, 2011). This method allows the researcher to keep control over who is indeed in the sample based on particular characteristics or expertise. The sample is usually small allowing the researcher to go in depth in the interview to gain a better understanding of the topic (Haque et al., 2022). Purposive sampling can be categorized into different groups and angles, whilst the most appropriate one for this research will be homogeneous sampling. This means that the sample group shares characteristics (e.g. share the same background/ interest/ knowledge of Generative AI). The sampling method is mostly used when the research question is specific to the selected characteristics, that later on will be examined in detail (Rai & Thapa, 2015).

As the study relies on data gathered through interviews, Eriksson & Kovaliainen (2008) suggest that unstructured or semi-structured interviews are advantageous, as they permit the respondent to direct the conversation towards topics they deem to be of the utmost importance. The authors further suggest that the unstructured approach could provide a more comprehensive understanding of the study object. David and Sutton (2011) advocate for a less structured approach, suggesting that an inductive study can benefit from unstructured methodologies. They elaborate on the advantages of this approach, highlighting how it can help to provide a more comprehensive understanding of the relevant research field. To obtain the advantages of a face-to-face interview but minimize the resources spent to visit the respondents, the interviews will be held over Zoom. This allows the authors to take facial expressions and body language into consideration when analyzing the data which Patel and Davidsson (2011) state is important since facial expressions and body language can provide valuable insights into the respondents' emotions, attitudes, and perspectives, which can be crucial for understanding the meaning behind their verbal responses. While conducting interviews over Zoom may have limitations, such as technical issues or the lack of physical presence, the benefits of capturing nonverbal cues through facial expressions and body language make it a suitable and practical approach for this study (Patel & Davidsson, 2011). Therefore, by combining an unstructured approach with the advantages of Zoom interviews,

this study aims to provide a comprehensive understanding of the research topic while minimizing resource costs. Each interview in this research will be held in Swedish, which is both the authors well as the interviewee's native language. Selecting a native language in an interview allows the interviewee to fully express themselves and describe different situations, unlimited by language barriers (Andreenkova, 2018). According to Andreenkova (2018), the chosen method is preferred in order to reduce possible risks of decreased interview cooperation as well as other overall measurement errors.

3.2.2 Secondary data collection

Secondary data is data that has already been collected by another individual or organization and that can be used as a source for further research. This type of data is an efficient, time-saving, and cost-effective way to gather information that is relevant to the topic (Walliman, 2010). For the research area, secondary data collection will be valuable, as it will provide access to existing datasets and research that has already been conducted on the topic. This will provide valuable insight into the current state of the field, as well as trends, future potential, and developments. The information provided through secondary data will be used to analyze the current trends in Generative AI research, such as the challenges that researchers face when attempting to apply Generative AI to real-world problems. (Szabo & Strang, 1997). In the internal phase, desk research provided an overall understanding of the topic, which led to the formulation of the research questions that framed the thesis.

When collecting secondary data for this research, it has been crucial to adopt a systematic and strategic approach in order to ensure the relevance and quality of the articles. Several aspects have been important to consider in order to find relevant and credible information from secondary sources. Since Generative AI is a rapidly evolving field, prioritizing recent publications has been of highest importance in order to ensure access to the latest research and developments. Also, to stay on topic, it has been important to consider the relevance and scope. This has been done by carefully reviewing the abstracts, introductions, and conclusions of the articles to assess their relevance to the research topic. Identifying relevant keywords related to Generative AI has also been crucial during the process. By including terms such as *"Startup", "Generative AI", "Machine learning", "Innovation"* and other relevant subtopics or applications that we have been interested in exploring, relevant articles have been filtered out and contributed to interesting findings for the thesis.

3.3 Thematic analysis

The data will be analyzed with the thematic method and conclusions about the potential effects of the technology in a startup setting will be taken. We will need to consider the results in the context of the research question and draw appropriate conclusions. The data analysis methods refer to the techniques used to analyze the data once it has been collected, such as descriptive statistics, exploratory data analysis, and regression analysis. All of these

elements are interconnected and must be carefully considered in order to effectively carry out the proposed project.

Braun & Clarke (2022) argues that thematic analysis allows the study to identify complex relationships within the large amount of data gathered through a qualitative method, hence this method will be used. The method's main focus is to examine themes or patterns within the data and thereby gaining a better understanding of the patterns to answer the research question. Transcription of the interviews into written text is a crucial step in a thematic analysis as it facilitates the iterative review of the data, leading to the identification and refinement of themes.

The transcription process thus plays a crucial role in generating dependable and precise findings. Bryman et al. (2022) argue that when searching for themes, it's recommended to look for repetitions, metaphors, analogies, similarities, differences, missing data, and transitions. One of the most common criteria for identifying a theme is repetition where the information might occur multiple times across one or multiple data sets (Bryman et al., 2022). However, Braun and Clarke (2006) highlight the fact that a high repetition per se is not an accurate criterion for a valid theme if it's not relevant to the research question. Hence, Bryman et al. (2022) state that the theme is a category identified by the analyst that is related to the research question and builds on codes identified in the transcripts that contribute to the research.

Thematic analysis is a popular method within qualitative research but is also criticized for oversimplifying the data and for lack of transparency. The analysis also relies on the researcher's interpretation of the data which can lead to a lack of objectivity and reliability in the analysis. However, this study will use thematic analysis since it is a useful and flexible approach for analyzing qualitative data and beneficial for the size of the study (Braun & Clarke, 2006). While some argue that thematic analysis may oversimplify data or lack transparency, these limitations can be addressed by using a rigorous and systematic approach to analysis, such as the use of multiple coders, regular team meetings, and the use of software tools to manage and organize the data (Braun & Clarke, 2022). The chosen method also has the ability to generate rich and nuanced findings. Despite the criticism, thematic analysis remains a valuable and widely used method for this analysis.

The initial stage of the analysis involves becoming acquainted with the data, followed by the identification of themes through coding. Subsequently, the identified themes are reviewed and finalized, resulting in the recognition of possible opportunities, challenges, and application areas for Swedish startups (Braun & Clarke, 2022). This approach is consistent with established qualitative research methods and is critical to gaining a comprehensive understanding of the research topic.

3.4 Limitations of the Study

This thesis will focus on Generative AI and its potential effects on Swedish Startups, without making any claims about the ethical implications of its use. The reasoning behind this limitation is due to a limited time frame, but also the limited network that affects the depth of the analysis. Independent of these factors, the analysis could provide a stronger opinion and discuss further the ethical implications, advantages, and disadvantages of the technology.

Due to a limited time frame, the focus will be set on Swedish startups, but not specifically on the industry. Nevertheless, the reliability and validity would've been strengthened by an international perspective with comparisons across countries and multiple industries. Simultaneously, a limited network and narrow information from primary sources make it difficult to internationalize the analysis and implement the theory on a wider perspective with comparisons of several industries. Another limitation related to the narrow network and time constraints is the difficulty to interview developers and/or employees at the companies providing the services of Generative AI. This would have provided a deeper understanding of the different application areas, and together with the developers, the researchers could have discussed and brainstormed potential opportunities for startups to apply technology. Despite recently discussed limitations, the selected approach should not be viewed as an inferior selection. By choosing to not analyze Generative AI from the developer side, one can easier understand the startups and their potential application areas, unbiased by any other actor.

The chosen interview method comes with many advantages, but also several potential pitfalls that can bias the analysis. In order to develop as accurate and reliable results as possible, Boyce and Neale (2006) suggest interviewees interview a large number of respondents to reach a point where they experience the same or similar issues or potential application areas. Factors such as different worldviews, characteristics, technological experiences, age, and curiosity about AI may bias the result if not applied in the right setting. To develop as accurate and unbiased results as possible, Stewart & Kamins (1993) suggest complementing the result with secondary research and literature to strengthen the evidence.

3.5 Validity of qualitative research

An important aspect of this research is to provide a result with high-quality, reliable insights, and valuable contributions. In respect of both the reader as well as the interviewees, a number of aspects need to be considered. The main area of the research quality is to obtain a high level of trustworthiness. Therefore, this section will discuss the four criteria that are crucial in order to provide high quality. Following, the authenticity of the research will be discussed, as an additional important driver for a qualitative and contributing result (Bryman et al., 2022).

3.5.1 Trustworthiness

In order to ensure the quality of this research, trustworthiness is essential. According to Bryman et al. (2022), Trustworthiness can be segmented into four crucial criteria, which include credibility, transferability, dependability, and confirmability, each of which focuses on different but critical points. By taking trustworthiness into account, the validity of collected data can be ensured and the risk of biased interpretation can be decreased.

3.5.1.1 Credibility

When it comes to ensuring the credibility of the results, it is essential to analyze the overall quality of the research. However, in order to validate the credibility, the researchers can apply several different techniques. One of these techniques is respondent validation, which is a valuable tool for ensuring that the data collected is a true reflection of reality. By verifying the accuracy of the data with those providing it, researchers can be certain that the information they are working with is as accurate as possible. This technique is especially beneficial when the data collected represents a complex or nuanced reality. By conducting respondent validation, researchers can gain a deeper understanding of the data and gain insights that otherwise would have been missed (Bryman et al., 2022).

3.5.1.2 Transferability

The second criterion presented by Bryman et al. (2022) is transferability, which refers to the level of generalization and transparency that the study can provide in different contexts. The goal should be to generate a clear structure and framework in order to deliver a high level of transferability. This means that the research should apply to other researchers in other/similar situations with a new group of interviewees. Qualitative studies are usually unique for the studied subject and are often concerned with a small range of data. However, to increase the transferability of the research, the researcher has included a clear overview or description of the data. This will ensure an easier understanding for other researchers and provide a result that others can continue to build upon.

3.5.1.3 Dependability

When conducting research, it is important to keep track of the entire process, including interview transcription, sample selection, and data analysis. However, depending on the scope and time constraints of a study, this auditing approach may be too time-consuming and complex. It is essential to consider the scope and time limitations of a study to determine how much emphasis should be placed on dependability (Bryman et al., 2022). This theory is additionally strengthened by Guba & Lincoln (1985), who suggest that researchers should maintain records from all stages of the process. This includes data and information from initial problem formulation, selection of research participants, fieldwork notes, transcripts, and brainstorming session decisions. Keeping all of these records accessible is essential for ensuring the accuracy and validity of the results.

3.5.1.4 Confirmability

Confirmability is emphasizing how one's individual beliefs and values can affect the study. As Bryman et al. (2022) elucidate, being completely impartial is challenging and almost impossible when it comes to business research methods. However, they state that when auditors are trying to establish conformability, it is critical to minimize the influence of personal values. This is further supported by Guba & Lincoln (1985), who assert that it is impossible to be completely objective, yet it is an important goal of the auditor's role.

3.5.2 Authenticity

The second aspect presented by Bryman et al. (2022) is authenticity, which brings another dimension to the analysis of the research quality. In addition to trustworthiness, authenticity is an essential criterion in order to obtain valid data (Lincoln & Guba, 1985). This aspect provides a broader discussion about the political influence of the research. Authenticity encompasses elements such as fairness, ontological authenticity, educative authenticity, catalytic authenticity, and tactical authenticity. However, fairness is crucial to consider, which considers the social context in order to achieve a fair representation of the sample. Simultaneously, ontological authenticity investigates an understanding of the social context whilst educative authenticity is considered if the study guides the participants that can help them understand other individuals in their own personal social reality. Catalytic authenticity is focusing on if the study is affecting the participants' behavior in a way that can change their circumstances. Lastly, actical authenticity is questioning the empowerment of the participants and if the study is helping them to take steps to be involved in certain actions (Bryman et al., 2022).

3.6 Ethical considerations

When performing research, it is essential to consider how to approach the ethical concerns that may occur throughout the development process. By including ethical considerations in the process, the risk of causing any harm to the readers or the participants is significantly diminished. The main focus when considering ethics is the participants of the research, and the researcher must therefore ensure that they are not negatively impacted by it (Bryman et al., 2022). In this research, the authors have constantly worked diligently to reduce any potential risks posed to the participants throughout the entire process.

Bryman et al. (2022) have outlined four guidelines for researchers that should be taken into consideration when performing qualitative research. These will be presented below:

- *There will be no harm to participants in any way.*
- *There will be no lack of informed consent.*

- *There will be no invasion of privacy.*
- *There will be no deception involved.*

The researchers conducted this study with the utmost respect and consideration of the participants. In order to prevent any ethical issues they ensured a form of consent was established before any interviews took place. This consent form was created with the participants best interests in mind and can be found in the appendix.

4.

Results

This chapter presents the results from the qualitative data gathering. Based on the information provided by the selected respondents, this section will demonstrate their current application areas of Generative AI in their businesses today, its challenges, possibilities in relation to startups, and whether it should be used as a tool or a core business.

This section will present the data gathered through the interviews, which will be categorized into three different themes; (1) Current application areas, (2) Challenges of Generative AI for startups, and (3) Opportunities of Generative AI for startups. Illustrated in Table 2**,** the respondents are presented with made-up names, positions, and comply sizes.

Company	**Name**	**Position**	**Relation to AI**
Company A	*Anders*	*Founder*	*Professional*
Company B	*Beatrice*	*AI Change Agent*	*Expert*
Company C	*Casper*	*Freelance photographer*	*Professional*
Company D	*Doris*	*Partner Business Manager*	*Expert*

Table 2. Respondents from the data collection.

4.1 Current application areas of Generative AI

For this thesis, we have been pleased to discuss the subject of Generative AI with a group of people with different experiences, backgrounds, and professionals. What they all have in common is a passion for carefully analyzing the outside world, predicting trends, and keeping up with the great adaptation and opportunities from Generative AI.

The first respondent, Anders is an entrepreneur who's working within the media industry and is actively working with Generative AI as a tool in his business. As of today, Generative AI complements his business by doing banners, content, and advertising at a rapid pace, at a low cost. Their customers are mostly publishers, and therefore it is of the highest importance to not provide material that would infringe on their business or generate a less qualitative result. Therefore, the tool must be applied with great care and precision, so that the information doesn't risk being cataloged. Uniqueness is of the highest importance, hence the team must be careful not to give out information that's personal and can be sold or be compared to others.

Anders's industry has during recent years changed tremendously, where Generative AI has become a great tool to efficiently work time and content creation, but also on an inspirational level. Nowadays, the time required to contact a media agency, and streamline data analysis and targeting has been cut and the AI contributes with results that provide better conversion from click to purchase. The development of the technology has drastically changed the business model for the company, forcing them to adapt to the new technology and its possibilities. The revenue generation model of Ander's business is based on user visits to their online platform. However, with the emergence of Text Generating AIs, customers may no longer be required to visit websites to acquire relevant information, thus creating a need for the venture to adapt its business model to remain relevant and competitive amidst the current changes in the market.

Working with implementing AI of course provides similarities among the interviewees. Another important interview was conducted with Beatrice, an AI Change Agent for a Swedish AI company. The company was founded by the Swedish government as dedicated to advancing AI in Sweden to benefit society, as well as businesses. They work with projects such as healthcare driven by data, decentralized AI, and education for partners. These programs provide courses and resources to partners in order to drive organizational change. Beatrice's main task is to provide clients with education as well as guidance for what AI solution fits their needs and organization best. Beatrice states that it is of the highest importance that companies and organizations become educated. If they find it difficult at this stage to adapt to changes, they will also be too late with adopting AI. Beatrice's role as an AI coach includes helping clients with choosing the right AI solution, which depends heavily on their main purpose and what data the company or organization has available. Administration solutions are as of today well developed and easily accessible, whilst production companies require a deeper process with an AI model that's optimized for their production. Organizations and companies that invest in AI for predictive maintenance purposes benefit both economically, but also efficiently, as they can predict defects in processes and equipment before they arise.

Apart from the interviewees that work with Generative AI for written text, we have also interviewed a freelance photographer that recently started working with Generative AI for photography purposes. Casper has a long career as a photographer and retoucher, he started experiencing the program Midjourney. The program has existed since 2022 and there have earlier been other similarities to it, but according to Casper, these have had a low quality and didn't match his requirements and qualities for his use. Once he tested DALL-E for a job with a client, where he tried to add snowy background to a product picture. The final result was vague and looked artificial, which led to a failed attempt.

Figure 1. *AI-generated image by Casper. Downloaded from Instagram, with permission from Casper.*

However, when mid-journey launched V5 (version 5), the opportunities opened up many potentials and he started experimenting with the program. By looking up his previous photographic references, he got the inspiration to write the prompts that later on were added to the program. Since Casper worked as a retoucher, he could use his knowledge to post-processing the generated photos which resulted in a realistic and extraordinary outcome. These photos differ tremendously from the more common photos that usually are seen from Midjourney. One of his AI Generated photos is shown in Figure 1.

Doris, our fourth respondent, is working in a large company as a Partner Business Manager. Her job involves working with end customers to identify their needs and requirements for AI projects, while her company provides the technology and expertise to create solutions that can generate the desired outcomes. However, Doris uses Generative AI as a tool to create value for their customers by providing solutions that can generate customized outcomes based on their specific needs and requirements.

4.2 Challenges of Generative AI for Startups

While keeping up with the ever-changing technological change that is currently underway, there are of course a number of challenges that confront us and constantly test the flexibility of companies' business models. In the interview, Anders stated that as of today, we still rely much upon Google, and it provides both advertising and content for the customer. However, a challenge that he currently can identify is that the customer needs to do a decreasing effort in the search. This contributes to higher requirements and more precise accuracy in the

development of AI for the company. Simultaneously, challenges in terms of potential IP infringement and copyright can lead to the entire value chain changing and collapsing. Anders additionally states his fear of an excessive change that threatens content writers too rapidly. Thus the business models of e-commerce and affiliates tend to collapse, if not adjusted and adapted properly in time. Anders believes that these challenges related to IT and copyright mean that lead generation and intermediaries will disappear completely. But do we oversee the ethics and legal penalties that come with Generative AI completely or do we still need human resources to verify the results? On this question, there are divided opinions between Anders and Beatrice, whereupon Beatrice believes that AI wouldn't replace human resources and he doesn't believe that there will be large-scale unemployment caused by the emergence of Generative AI. Instead, she posits that technological advances will create new occupational categories and job opportunities. As an example, she notes that whereas programming may not have been a job before, it is now a common occupation. However, she also acknowledges that, even though AI has advanced substantially, there is still a very long way to go before AI can do everything. Therefore, people will continue to be needed to supervise and direct the AI, like Beatrice and her company does today but in a wider spread.

Beatrice stated that *"There are many reasons to be worried when talking about AI, and it is therefore of the highest importance to educate yourself"*. Besides these challenges of Generative AI, Beatrice lifts another aspect of the risks and challenges that society is facing. These risks and challenges threaten not only the individual but also the corporate and social levels. Amidst the rapid advancement of AI technologies, there are significant causes for concern. The unequal access to AI can lead to a deepening of economic and social differences, where many businesses are unable to compete in the face of automation. As of today, the industry is unregulated, which creates differences among countries. Whilst the US barely has any regulations, Europe currently develops strict regulations that create a competitive advantage for American startups. Beatrice simultaneously predicts an appalling rise in fraud and scams, generated by AI. Already, there have been reports of AI being used to generate convincing fraudulent voice, text, and other content. The high accuracy of this technology, while beneficial in the right hands, can easily cause irreparable harm if misused, which further highlights the need for education about Generative AI.

However, AI can additionally bring many benefits, such as increased efficiency in tackling climate change and providing healthcare solutions. AI is also transforming the entertainment industry, with AI-generated content becoming increasingly prominent in film and media. Therefore, it is essential to educate oneself on the implications of AI, both positive and negative, in order to ensure that it is utilized responsibly. Moreover, appropriate legislation must be put in place to ensure that AI is used fairly and ethically.

Challenges can be seen from many angles, and AI doesn't only face challenges in relation to its own technology, but also in relation to human acceptance. This is especially in terms of educational purposes. In the interview with Beatrice, she expressed an interesting similarity with the introduction of both the calculator and the Internet, when those created strong opinions on whether it was beneficial or not. The problem as of today is that many schools

and municipalities are worried about introducing AI for educational purposes. Instead, Beatrice believes that we must educate people on how to use them in an effective and beneficial way rather than exclude them. Today, companies are presented with a wealth of opportunities to develop products and services with minimal investments.

When it comes to the use of Generative AI for photos, Casper expressed a number of challenges. First of all, it is hard for an individual without experience or knowledge of photography or editing to generate an accurate result from programs such as Midjourney or DALL-E. As the programs are operating today, they're more complex and difficult to use than text-Generative AI. To work with them, the user needs a photo background, but also a strong creative sense to generate the prompts.

Secondly, the question is also whether there is a customer in this segment. With this statement, the customer base for these photographs is as of today narrow and hard to get. Casper questions the technology whether it is only a trend like crypto and that we just go through different seasons of fascination with different technologies. Simultaneously, he thinks there is enough to explore from ai images, which is why the technology most likely is here to stay.

The challenge of acceptance is permeated through each interview, and these are also present from the photographer's perspective. Casper believes that one must have the ability to conceive in order to take advantage of Generative AI as a device to gain an advantage. Through conversations with other business partners, Casper has noticed that a few people are intimidated, especially those who are not technically gifted. These people then become concerned because they assume they will not be proficient enough to use Generative AI. Beatrice drew a parallel between present anxieties about Generative AI and the apprehension experienced by artists when the calculator was first invented. Similar to this, Casper additionally compared this phenomenon to that this digital transformation is analogous to when artists were scared of the camera's ability to capture real images on paper without any of the artistry that went into painting on canvas. By merely pressing a button, one could obtain a picture with no knowledge of the artistic technique behind it. In the same way, AI could become a valuable asset to the industry, making it even stronger.

As one of the main challenges for Generative AI, Casper has been thinking about the legal rights and issues with the technology. In a conversation with an MSB (The Swedish Civil Contingencies Agency) employee, they discussed the implication of misinformation. Pictures can help spread false facts, but based on his own thoughts - he sees it from the opposite perspective. Casper has always seen photography as fiction that does not represent reality. In photos, there's a special light set that can never be seen by the eye. In the future, his theory is therefore that people will get more distance from how the image is perceived. A more skeptical vision of images and photos will be developed as filters and retouched images become normalized, but this becomes another level as people couldn't do this kind of thing in such a short time with such scarce resources with Photoshop. Casper's theory is therefore that images might not be the big threat, given how AI worked on the other levels.

Given that Generative AI for photography is still in its early stages, no laws have been established to protect the makers of the original artwork which is used to teach the algorithms underlying programs such as Midjourney. It is likely that new laws will be implemented soon, as AI is trained on other people's work. Although copyright already exists on this material, computers are modifying it to generate a new image with elements of the original work. At present, this is a gray area, but this could - and is likely to - change quickly to defend the originators. It is probable that businesses and people using AI-generated images will have to confirm that they are not genuine.

Also, Doris stated several challenges that come with Generative AI. Based on Doris's answer, she sees one of the biggest challenges with Generative AI as the potential for blindly trusting the output or generated answers without questioning its validity. She suggests that there is a risk of making important decisions based on the generated output that may not be entirely accurate or well-founded. Doris's concerns highlight the need for caution and critical thinking when using Generative AI. She states that it is essential to understand the limitations of the technology, validate the results, and avoid blindly trusting the output without questioning its validity. It is also important to develop ethical and transparent practices around the use of Generative AI to ensure that it is used responsibly and for the benefit of all. Doris also discussed the challenges with Generative AI as the potential for the technology to generate outputs based on illegally obtained or biased data. She highlights the importance of making sure that the data is accurate. If you rely on the output from Generative AI for important strategic decisions, it might be misleading since we do not know if the data is trustworthy yet.

"I think a problem in the long term may be that the information you have is not accurate."
- Doris

4.3 Opportunities of Generative AI in relation to startups

The many opportunities of Generative AI in relation to startups are described as disruptive according to Anders. However, both Anders and Beatrice believe that entrepreneurs and young startups have numerous unique talents that are undergoing economic threat. Implementation of Generative AI in an early stage of a startup company can therefore constitute a valuable tool for the many processes they're facing. By developing a prototype, benchmarking against different companies, providing marketing material and content, and analyzing business cases, entrepreneurs can reduce time, efficiently focus on core areas, and simultaneously cut costs. By individually creating and developing as much as possible before sourcing and hiring external resources, the company can gain competitive advantages. Based on personal experiences, Anders ensures that a challenge for an entrepreneur is the financial aspects in terms of developing a beta version. This is usually a costly phase where the entrepreneur sells out themselves already in the internal phase. By introducing Generative AI, the entrepreneur can instead take the idea to a beta version early and cheaply, which leads to faster sales and higher prices.

According to Anders, the outcome and result of the information are of the highest importance for any business. Therefore, human resources will still take a crucial role in the paradigm shift. If unique data is available, it is an incredible tool. The truth is there if the company can possess unique data and databases. Authorities or logistics companies with their own set of data are therefore an excellent market for such application areas. By possessing such verified information, the company can communicate with the customer more efficiently. Truth and clear rules and agreements have already been verified, whilst human resources are mandatory to ensure such information.

"I have been skeptical about AI in photography before. What we today, but also in the past, created through physical photoshoots is very unique and I don't think it can be replaced."

- Casper

Beatrice also believes that it is not AI that will replace people, but rather those who have adapted to the new technology and can effectively use the AI. This is an interesting statement that is supported by her beliefs about the future potential of startups. Technology possesses great business opportunities that improve society and streamline companies' ability to grow with fewer economic resources. However, it is essential to become familiar with the tools and keep track of developments in order to create a competitive advantage in the industry. This is a beneficial opportunity to start using without time-consuming procedures. There is no need to possess a high level of technical skill, and programming proficiency is no longer necessary to the same extent. It is important for startups to still consider the potential risks, ethical implications, and GDPR regulations to gain the benefit though. There is a rapid increase of firms utilizing AI in various ways, which provides a clear benefit to customers. However, it is possible that this growth may result in an artificial bubble where some ventures may not be viable in the long term. To gain a significant edge, it is advisable to focus on areas where the industry currently has limited AI expertise. Additionally, it is important to create a positive reputation to foster trust between AI and humans. Today, companies are presented with a wealth of opportunities to develop products and services with minimal investments. However, in order to remain competitive in the long term, it is essential for startups to build robust customer relationships. AI presents a new challenge as it requires businesses to be highly specific and clear with their objectives, something which has not been necessary in the past. Those who are successful in this endeavor will be well-positioned to reap the rewards of AI.

Doris stated that she sees a huge possibility with the technology. One potential opportunity with Generative AI is the ability to automate tasks and processes that were previously done manually, such as content creation or product design. By using Generative AI, businesses can generate large volumes of content or designs quickly and efficiently, saving time and resources. She also sees the potential for Generative AI to transform the way businesses operate and create new opportunities for innovation and growth. By leveraging the power of Generative AI, businesses can automate tasks, create new products and services, and gain valuable insights that can inform their decision-making processes. Generative AI can also be used to analyze large amounts of data and generate insights that can inform business

decisions, such as identifying patterns in customer behavior or predicting market trends. For startups, gaining insights from data is critical to make informed decisions that can help them stay ahead of the competition, identify market opportunities, and optimize their business strategies. Doris believes that the potential of Generative AI is not only to facilitate specific tasks but to transform entire industries by enabling the development of new products and services. As such, it is essential for startups and businesses to explore the potential of Generative AI fully and incorporate the technology into their operations to stay competitive in the rapidly evolving digital landscape.

5.
Analysis

The present chapter employs a thematic analysis approach to examine the gathered data, identifying and presenting the central themes related to the research question. The chapter follows a similar structure to the result chapter, facilitating a comprehensive analysis of the theory using the collected data.

To understand the future effects Generative AI can have on Swedish startups, the theories presented in chapter two will be analyzed and related to the gathered data. This will provide an understanding of the challenges, opportunities, and potential application areas of Generative AI for Swedish startups.

5.1 Presentation of themes

When gathering the interview data, several interesting themes emerged. These themes have been used to form codes that demonstrate the interviewees applications for Generative AI, its issues, and the advantages they think the technology can present for startups. These themes and codes are demonstrated in Table 3, Table of Findings. Nonetheless, these findings serve as the cornerstone for the analysis of this research and will be discussed in this chapter. The themes are shown in Table 3 along with their related codes to give a clear comprehension of the main areas that have been addressed by the interviewees. Followingly, these codes will be analyzed and put into context by using the theory from the literature review.

Theme	**Codes**
Purpose of Generative AI	● Passion for carefully analyzing the outside world ● Predicting trends ● Keeping up with the great adaptation ● Interest in the opportunity of generative AI ● Uniqueness ● Early adoption
Purpose of application	● Banners, content and advertising ● Photography ● Education ● Social benefits ● Drive organizational change

Challenges	• Infringe personal information • Legal regulations / GDPR regulations • Risk of being cataloged • Threats the business model • Decreasing effort in search • Ethical and legal penalties • Challenge of acceptance • Fear of being non-technical • Implication of misinformation
Opportunities	• Overcome economical threats • Leverage the internal phases • Efficiently focus on core areas • Streamline companies ability to grow • Take the idea to a beta version early • Improve society • Build robust customer relationships with customers and clients

Table 3. Table of Findings

5.2 Application areas

To understand in what application areas Swedish startups can leverage Generative AI, the theories on why startups fail, expiration and exploitation, and the definition of startups will be analyzed in relation to the gathered data. This will provide insights into possible application areas.

Blank and Dorf (2019) define a startup as; *"a temporary organization designed to look for a business model that is repeatable and scalable"*. Alleged with the definition, Cockayne (2019) argues that all startups have the ability to grow in common. In order to grow, Anders stated in the interview that Generative AI can be a tool for firms to generate output in a more efficient way. Vecchiato (2015) also highlighted the importance of responding to external changes that have the potential to become more successful. The respondents' motivations for exploring Generative AI are multifaceted and varied. Some of the motivations that have been mentioned include a passion for carefully analyzing the outside world, predicting trends, and keeping up with the great adaptation of Generative AI. Common for all respondents is that they use Generative AI as a tool that can help them stay ahead of the curve, by enabling them to gain insights into emerging trends and developments. This argues for the advantages of a mixture of Exploration and exploitation presented by Stadler et al. (2014).

As a tool for both marketing, content creation, and analytical purposes, the technology also gives the user an opportunity to create something unique, at a rapid pace. By utilizing machine learning algorithms, Generative AI enables users to create new and innovative works that may not have been possible with traditional methods. Additionally, some

respondents are motivated by the potential of Generative AI to help them gain an early advantage in their respective industries. Early adoption of Generative AI can give users a competitive edge, enabling them to develop unique solutions and products that stand out from the crowd.

The motivations for exploring Generative AI are driven by a desire to stay ahead of the curve, create something unique, and gain a competitive advantage. These motivations are underpinned by a strong interest in the capabilities and potential of Generative AI, and a passion for pushing the boundaries of what is possible with this technology.

In addition to their motivations for exploring Generative AI, the respondents have also mentioned several areas where they are currently using this technology. These include:

- Banners, content, and advertising: Anders are using Generative AI to create banners, content, and advertisements that stand out and capture the attention of their target audience. By utilizing machine learning algorithms, they are able to create unique and eye-catching visuals that help to differentiate their brand from competitors.

- Photography: Casper uses Generative AI to create incredible works of art as an alternative and complement to physical photography. Machine learning algorithms can be trained to perform tasks such as object removal, image enhancement, and background replacement, saving time and effort for photographers and graphic designers.

- Education: Astrid is exploring how Generative AI can be used to enhance the education experience. Machine learning algorithms are used to streamline processes for clients, based on their strengths and weaknesses. This can help to improve clients' engagement and performance.

- Social benefits: The interviewees are also using Generative AI to drive social benefits. For example, the algorithms can be used to analyze social media data to identify trends and patterns, enabling organizations to better understand their target audience and create more effective marketing campaigns.

- Drive organizational change: Finally, the interviewees are exploring how Generative AI can be used to drive organizational change. By utilizing machine learning algorithms, they are able to gain insights into their business processes and identify areas where improvements can be made. This leads to increased efficiency, productivity, and profitability.

5.3 Challenges

To understand what challenges Swedish startups might face when implementing Generative AI, it's important to understand the dark side of innovation. Hence, the theory of the dark side of innovation will be related to the respondent's thoughts on Generative AI. Simultaneously, we will followingly connect the theory to the codes from Table 3. At the outset of AI integration, a range of emotions and sentiments surfaced as the novel technology seemed to pose a threat to the employment of human resources (Mayahi & Vidrih, 2022). As Beatrice and Casper compare Generative AI with the introduction of the calculator and camera that drastically changed the way we operated, Generative AI has the potential to disrupt many industries depending on the adoption of the technology. The fear of being non-technical and not capable of managing the new technology is evolving into a challenge of acceptance, which creates challenges when implementing Generative AI into the business model.

Nelson (1962) describes how innovation can produce negative and positive outcomes which Beatrice also highlighted by describing possible ways that people can use Generative AI to fraud others. Legal regulations, including GDPR regulations, must therefore be considered and seen as a challenge and threat. Anders was also skeptical of the legal regulations regarding Generative AT and IP rights. They both argued with Coad et al (2021) and identified positive outcomes of the innovation but also highlighted the potential dark side and the need for legal regulations. As highlighted by Beatrice's examples of future scams, Generative AI can be used to create fraudulent content or impersonate real people or organizations. This could lead to significant harm for individuals and businesses, including financial losses, reputational damage, and even legal repercussions.

Furthermore, there are also concerns related to intellectual property (IP) rights when it comes to Generative AI. As both Doris and Anders pointed out, the current legal framework may not adequately address the unique challenges posed by this new technology. Sweden's law system does not keep up with technological development. There is a risk that Generative AI could be used to create content that infringes on the IP rights of others, or that it could be used to create content that is difficult to attribute to a specific creator or owner.

Based on both the interviews and academic findings, Generative AI has enabled businesses to create and develop new products and services at a faster pace than ever before, which has helped them to streamline and automate many processes. However, there are also potential negative consequences associated with the use of Generative AI, if it is not used responsibly. One of the most significant concerns related to Generative AI, according to Beatrice, Anders, and Doris**,** is the risk for misuse or abuse. Anders means that this could be in terms of both the risk for companies to become cataloged, but also the risk of decreasing effort in search and threats for the current business model. Doris stated that she believes that a problem in the long term may be that the information you have is not actually legally provided. These concerns are supported by Coad et al. (2021), who point out that when computers and algorithms designed for AI are being trained, they can both intentionally and unintentionally create biases that reflect different social inequalities.

The concerns raised by Beatrice, Anders, and Doris and supported by Coad et al. (2021) underscore the importance of ensuring that Generative AI algorithms are transparent and explainable and that they are trained on legally obtained and ethically sourced data. This can help to mitigate the risk of misuse or abuse, as well as the creation of biased algorithms that reflect social inequalities. By addressing these concerns and implementing ethical and transparent practices, Generative AI can be harnessed to its full potential while also minimizing its potential risks.

To understand the adoption of Generative AI and the potential challenges Swedish startups might face when implementing the technology, the hype cycle will be analyzed in relation to the respondent's thoughts. This contributes to an understanding of the adoption of Generative AI and hence can identify challenges with the adoption. All respondents shared the same excitement about Generative AI and its potential and also highlighted the amount of media attention the technology got in recent times, arguing for the adoption to move on to the second stage of the hype cycle, the Peak of Inflated Expectation. However, the respondents also stated that they identified limitations with the technology and the lack of legal regulations will, according to the theory, decrease the interest in Generative AI (Vashisth et al., 2019).

Even though Casper is skeptical about the originality of the output of generative AI, he highlights that there is enough to explore from AI to continue implementing it in his day-to-day work. Hence, he believes that Generative AI will not fully replace the photo industry but rather work as a tool to make some operations easier or more cost-efficient. Beatrice contends that there are significant opportunities for the development of products and services with minimal investments through the utilization of Generative AI. Following Forbes's (2022) definition of a startup, where the aim is to quickly scale the business, often by iteration, a process where the development and improvement of the product are based on feedback and usage data from a minimal viable product (MVP) generative AI can help Swedish startups to both grow and hinder the potential failure due to expensive operations. This argument suggests that the interest from Swedish startups in this technology is expected to increase, ultimately leading to its entrance into the fifth stage of the hype cycle, the Plateau of Productivity (Vashisth et al., 2019). These assertions imply that Generative AI holds great potential for cost-effective innovation and commercial success for Swedish startups. Moreover, the expected trajectory of Generative AI's hype cycle suggests that it may reach a mature stage of widespread adoption and practical implementation. All respondents believe that Generative AI will change the way we do things today leading to more efficient operations for startups. At the same time, Anders worries that firms will throw themself into the technology fast to stay relevant without truly understanding what it is and the risks associated with it. This is related to the dark side of innovation where Coad et al., (2021) highlight the importance of introducing new technologies with careful consideration in order to protect both individuals and businesses. On the other hand, Christiansen et al. (2015) argue that disruptive innovation, as Generative AI has the potential to radically change the way we operate and hence, as alleged by Adams's thoughts, requires a flexible business model.

Beatrice also highlights the risks but believes that education will be a key part of a successful implementation. When the adoption of Generative AI hit the fifth stage of the hype cycle, the Plateau of Productivity, most of the risks might be identified and more firms will dare to rely on Generative AI since it will become the standard.

Taken together, the Hype Cycle can help us understand the evolution of Generative AI and its potential effects on Swedish startups. While it has gone through some ups and downs, it is now in a stage where it is being used in practical applications, and there is a lot of potential for it to become more widely adopted in the future. The respondents positive attitude towards the future possibilities argues for Generative AI as a disruptive innovation that will change the way we work today leading to wider adoption.

5.4 Opportunities

To understand what opportunities Generative AI can have for Swedish Startups, the theory of why startups fail will be analyzed in relation to the gathered data. Wasserman (2012) emphasizes the role of the founder in a startup for its success and argues that he/she has a key role in decision-making, team building, fundraising, and relations management. Similarly, the respondent Beatrice argues that the founders importance will increase in startups as a result of the implementation of Generative AI, where more people/firms can deliver the same quality of output. Beatrice also believes that if many companies offer the same output, the relationships and the founder as a person will become increasingly important for a startup's survival. Hence, Generative AI has the potential to further increase the value of the founder of Swedish startups and the startup can focus on building robust customer relationships with both customers and clients. Doris also emphasized the value of the founder and personal relationships as a result of the more digital environment where the output possibly could become more homogeneous.

According to Wasserman (2012) and Pride (2018), the founder is crucial for the success of a startup as they often hold the responsibility of securing funding. The insufficiency of economic resources or the excessive share allocation of the founder while securing investment may lead to business failure. Both Anders and Beatrice believe that the implementation of Generative AI in an early stage of a startup company can be a valuable tool for the many processes they're facing. The tool could speed up and streamline the company's internal phases such as developing prototypes, benchmarking, providing marketing materials, and analyzing business cases. By doing so, entrepreneurs can efficiently focus on core areas whilst simultaneously reducing both time and overcoming economic threats. Anders further highlighted how Generative AI can reduce the failure rate of startups since entrepreneurs can keep their shares longer since the need for large investments in the early stages could decrease. Anders's observation regarding owners frequently compromising their interests too readily for investment aligns with the challenges that founders face as they endeavor to secure funding. This process necessitates the possession of robust social skills

and an expansive social network. This could imply that Generative AI as a tool for startups could possibly lower the failure rate of Swedish startups.

There is a significant interest in the opportunity of Generative AI among all respondents. The potential effects of Generative AI, such as reducing time and costs, could be game-changers for startups. Early adoption of Generative AI could create a competitive advantage for those who are willing to invest in and experiment with the technology.

Pride (2018) further states that one primary reason for failure is flaws in the business model, more specifically the lack of understanding of the market or target audience. The lack of market research and analysis can result in an insufficient understanding of the target audience and their needs resulting in a business that does not meet the demand of the market. Aligned with Pride (2018), Beatrice and Anders believe that businesses will fail if they do not adopt the technological development of Generative AI in their organizations. Hence, firms need to both explore and exploit this new technology to stay relevant and not let new firms take market shares. The technology could provide startups with relevant market research and analyze customer data to align the product or service to the current demands. But Doris also stated concerns about trusting the output from Generative AI too much where she believes that it must be carefully used when making business decisions since it might not be correct.

To further investigate what opportunities Generative AI can have for Swedish Startups, the theories of disruptive innovation will be analyzed in relation to the gathered data. Beatrice's thoughts about Generative AI suggest that it has significant potential for Swedish startups. She mentions that it can automate time-consuming tasks and provide data insights that can help companies make better decisions. Additionally, Beatrice points out that Generative AI can assist in product design and development, making it easier and faster for companies to create new offerings. Another potential application area is in the optimization of business processes. By automating tasks such as data entry and analysis, companies can streamline their operations and focus on higher-value tasks such as innovation and customer service.

When considering the potential effects of Generative AI on Swedish startups, it is important to keep in mind the concept of disruptive innovation. Disruptive innovation refers to the introduction of a new technology or product that creates a new market and disrupts existing ones (Christensen et al., 2015). In the case of Generative AI, it has the potential to disrupt traditional methods of product design and development by making it more efficient and cost-effective.

One potential application area for Generative AI in Swedish startups is in the creation of personalized products. By leveraging data and machine learning algorithms, companies can create products that are tailored to individual customer preferences and needs. This can result in higher customer satisfaction and loyalty, ultimately leading to increased revenue and growth.

The responses from Beatrice and Anders highlight the importance of both exploration and exploitation in the context of AI adoption by Swedish startups to stay attractive on the market. Beatrice's comments suggest that Generative AI presents an opportunity for exploration, as it allows organizations to venture into new territory by utilizing predictive maintenance applications that can provide economic and efficiency benefits. At the same time, Beatrice stresses the importance of educating oneself about AI and being adaptable to change, which implies the need for the exploitation of existing knowledge and resources. Aligned with Beatrice, Anders also emphasizes the need for exploration and exploitation. He suggests that a dynamic business model is required to adapt to changes and take advantage of new opportunities that arise from technological advancements, which emphasizes the importance of exploration. Simultaneously, Anders highlights the critical importance of being able to adapt to changes quickly and efficiently, implying the need for effective exploitation of existing knowledge and resources.

In general, the responses suggest that the successful adoption of Generative AI as a tool for startups requires a balance of exploration and exploitation. Organizations must be willing to explore new opportunities presented by AI while also effectively exploiting existing knowledge and resources to adapt to changes quickly and efficiently. This is aligned with the concepts of creative destruction and disruptive innovations, which lead further into the scales between exploration and exploitation (Katz, 2002). The dilemma of balancing the investigation of potential opportunities and the utilization of pre-existing facts is one of the most fundamental conflicts that individuals and businesses continually grapple with.

However, there are also logical solutions to this dilemma, such as deeply inspecting the networks and combining structural elements of networks and social relations Stadler et al. (2014). A technology-powered answer to compile and treat data in one spot can also be applied to an apparently unrelated good or service. This has altered the approach of invention and R&D into a more spread out and open system, in which research and variation more and more take place across corporate edges.

To further understand what opportunities Generative AI can have for Swedish Startups, the respondent's future predictions will be analyzed in relation to the presented theory on the topic. It is breathtaking to think about how Generative AI is expected to continue to grow in the near future and according to Syam & Sharma (2018), Generative AI has the potential to revolutionize the way we interact with machines and the technology allows us to create new and unexpected experiences, at a pace that none of the interviewees could've expect. Furthermore, Doris suggests that Generative AI can be used to generate entire business ideas, which can help startups to identify new opportunities and potential markets. By leveraging Generative AI, startups can gain a competitive advantage by quickly generating new and innovative ideas.

In the near future, AI models are predicted to generate content that is increasingly customized to individual needs and preferences, and as stated by Beatrice, it is breathtaking to think what will happen within the next five years. As predicted by the AI change agent, AI-generated

images, videos, and audio will become commonplace in advertising, entertainment, and other media. AI-generated content will also become more lifelike and realistic, making it even more difficult to distinguish between real and computer-generated content.

Whether the predictions of the future for Generative AI are positive or negative might be twofold, depending on the individual's personal setting to it. However, as it will become more difficult to distinguish between real and computer-generated content, an explosion of AI-assisted innovation can threaten the workforce (Christensen et al., 2016). Both through literature and through discussions with experts, it is difficult to predict exactly how the technology will develop in the future, but despite the negative aspects of it, our experts believe that the benefits will outweigh it. Something that is definite though is that the business landscape will change and thus also our professional roles. Beatrice believes that we will see new industries that we hardly can imagine today, which means that many professions will change. Both the expert respondents and Bushe (2013) mean that we also can expect to see more widespread applications of Generative AI, such as in education, healthcare, transportation, and entertainment. The predictions of the future will therefore not only benefit the individual but also improve society. In that way, before we realize that everyone can use AI, there will be a lot of opportunities for startups. The key to adapting to this change is through education, and there will be companies for education in a world where AI exists. The problem today is that schools and municipalities are afraid of AI, which makes it difficult to adapt to the technology for a beneficial purpose, but according to both Beatrice and Casper, this is only a temporary problem that will disappear over time.

At the outset of AI integration, a range of emotions and sentiments surfaced as the novel technology seemed to pose a threat to the employment of human resources. However, with the passage of time, this perception shifted from being a source of apprehension to being viewed as a means of gaining a competitive edge. Companies can now leverage AI to train and redeploy their workforce, enabling them to optimize their potential (Mayahi & Vidrih, 2022). All interviewees mentioned the fear of new innovations as a common aspect of many earlier revolutionary technologies such as the camera and the calculator. This fear gives the early adopters a competitive advantage, as they are already in the internal phase and can adapt to the technology. However, all interviewees simultaneously believe that the technology will not replace human resources, but instead redeploy the workforce with a shifted focus. Beatrice means that AI will not replace human resources and it will not create large-scale unemployment caused by the emergence of Generative AI. Instead, she posits that technological advances will create new occupational categories and job opportunities.

6.

Conclusion

This chapter entails presenting the conclusions derived from the analysis and results obtained in response to the research questions. Additionally, theoretical implications, practical implications, and suggestions for future research will be expounded upon.

6. 1 Generative AI's effect on Swedish Startups

This thesis focuses on providing an understanding of what future application areas, opportunities, and challenges Generative AI can have on Swedish startups. In conclusion, Generative AI has the potential to significantly impact Swedish startups in multiple application areas, including prototyping development, benchmarking, marketing, content creation, and business case analysis. By adopting Generative AI early on, startups can reduce time and costs while focusing their efforts efficiently, potentially lowering the failure rate of Swedish startups. However, implementing Generative AI requires strong social skills and networks from the entrepreneur and a flexible business model that can adapt to market changes. The early adoption of Generative AI can create a competitive advantage for startups, reducing the failure rate of new companies. Still, barriers to entry may arise if the entrepreneur lacks social skills and networks. Furthermore, the implementation of Generative AI has the potential to increase the value of the founder of Swedish startups, reducing the need for large investments in the early stages and enabling better market analysis and understanding. However, Generative AI will also change the way we do things today, leading to more efficient operations for startups, and creating new jobs while some jobs may disappear.

It is clear that Generative AI has significant potential for Swedish startups. By embracing this technology, companies can improve their efficiency, create better products, and ultimately, drive growth and success. However, it is important to approach the adoption of Generative AI with a careful and thoughtful strategy to ensure that it is implemented in a way that aligns with the company's goals and values.

6.2 Theoretical implications

The theoretical implications of this research are multifaceted. First, this study contributes to the literature on AI and entrepreneurship by shedding new light on the potential applications of Generative AI in the Swedish startup scene. The findings of this research provide a framework for future studies on the role of AI in startup ecosystems and its impact on entrepreneurship and innovation. Additionally, the identification of the challenges and opportunities presented by Generative AI can inform research on the adoption and diffusion of technology in the business world.

The second theoretical implication of this research contributes to the literature on social capital and entrepreneurship by highlighting the importance of social skills and networks in implementing Generative AI. This study highlights the need for entrepreneurs to have strong social networks and interpersonal skills to successfully leverage Generative AI in their businesses. This finding has implications for future research on the role of social capital in the success of entrepreneurial ventures.

Third, this research contributes to the growing body of literature on responsible AI adoption. The careful and thoughtful approach recommended for implementing Generative AI aligns with recent calls for responsible AI adoption that considers the ethical, social, and environmental implications of technology. This study highlights the need for entrepreneurs and policymakers to approach the adoption of AI with a critical and ethical lens to ensure that it aligns with their goals and values. The theoretical implications of this research contribute to a better understanding of the potential applications of Generative AI in the Swedish startup scene and the importance of social capital and responsible adoption in leveraging this technology for growth and success.

6.3 Practical implications

The practical implications of this thesis suggest that Swedish startups should consider the adoption of Generative AI in their business operations. By leveraging this technology, startups can potentially reduce their costs, increase their efficiency, and improve the quality of their products and services. Furthermore, the early adoption of Generative AI can create a competitive advantage for startups, helping them to stand out in a crowded market and potentially reducing the failure rate of new companies. However, implementing Generative AI requires entrepreneurs to have strong social skills and networks, and a flexible business model that can adapt to market changes. Thus, startups should focus on building their social networks and maintaining flexibility in their business operations. Additionally, companies should approach the adoption of Generative AI with a thoughtful strategy, ensuring that the technology aligns with their business goals and values.

The practical implications of this thesis highlight the potential benefits of Generative AI for Swedish startups, but also the need for careful consideration and planning before implementation. By taking a strategic approach, startups can leverage this technology to drive growth and success in their business operations.

6.4 Recommendations for future research

Based on the findings of this thesis, there are several areas for future research that could further enhance our understanding of the potential impacts and application areas of Generative AI for Swedish startups. It would be valuable to explore the social and ethical implications of Generative AI for startups. While Generative AI has the potential to offer significant benefits to startups, it is important to consider its social and ethical implications. Future research could investigate the potential risks and challenges associated with implementing Generative AI, such as job displacement, legal issues, data privacy concerns, and provide guidelines for startups to mitigate these risks.

Another recommendation for future research is to investigate the quality of the generated output. One of the biggest challenges in Generative AI today is to generate an output of high quality that is indistinguishable from human-generated content. The technology is evolving at a rapid pace and the huge amount of users puts pressure on the result. Therefore, further research in the area could explore ways to improve the quality of Generative models, such as using better training data, refining the model architecture, or implementing more effective training techniques. To support the importance of this recommendation, the respondents from the interviews highlighted the importance of accurate and trustworthy results as one of the main drivers of innovation.

Bibliography

References retrieved from articles and literature

Aghion, P., & Howitt, P. (1992). A Model of Growth Through Creative Destruction. Econometrica, 60(2), 323-351.

Andreenkova, A. V. (2018). How to choose interview language in different countries. Advances in comparative survey methods: Multinational, multiregional, and multicultural contexts (3MC), 293-324.

Autor, D. (2015). Why Are There Still So Many Jobs? The History and Future of Workplace Automation. The Journal of Economic Perspectives, 29(3), 3-30.

Batchelor, R. (1994). *Henry Ford, mass production, modernism and design (Studies in design and material culture)*. Manchester: Manchester Univ. Press.

Bell, E., Bryman, A., & Harley, B. (2022). Business research methods. Oxford university press.

Berger-Tal, O., Nathan, J., Meron, E., & Saltz, D. (2014). The exploration-exploitation dilemma: a multidisciplinary framework. PloS one, 9(4), e95693.

Bilodeau, C., Jin, W., Jaakkola, T., Barzilay, R., & Jensen, K. F. (2022). Generative models for molecular discovery: Recent advances and challenges. Wiley Interdisciplinary Reviews: Computational Molecular Science, 12(5), e1608.

Blank, S., & Dorf, B. (2012). The startup owner's manual. the step-by-step guide for building a great company Vol. 1 (1.st ed.).

Boyce, C. and Neale, P. (2006). Conducting In-Depth Interviews. Technical report, Parthfinder International.

Bushe, G. R. (2013). *Generative process, generative outcome: The transformational potential of appreciative inquiry. In Organizational generativity: The appreciative inquiry summit and a scholarship of transformation.* Emerald Group Publishing Limited.

Buenstorf, G. (2016). *Schumpeterian incumbents and industry evolution*. Journal of Evolutionary Economics, 26(4), 823-836.

Braun, V., & Clarke, V. (2022). Thematic analysis: A practical guide.

Braun, V., and Clarke, V. (2006). 'Using Thematic Analysis in Psychology', Qualitative Research in Psychology, 3: 77–101.

Chandel, S., Yuying, Y., Yujie, G., Razaque, A., & Yang, G. (2018). *Chatbot: efficient and utility-based platform. In Science and Information Conference* (pp. 109-122). Springer, Cham.

Christensen, C., & Bower, J. (1996). *Customer power, strategic investment, and the failure of leading firms.* Strategic Management Journal, 17(3), 197-218.

Christensen, C., Raynor, M., & McDonald, R. (2016). *What is disruptive innovation?* Harvard Business Review, 2015(December), Harvard business review, 2016, Vol.2015 (December).

Coad, A., Nightingale, P., Stilgoe, J., & Vezzani, A. (2021). The dark side of innovation. Industry and Innovation, 28(1), 102-112.

Cockayne, D. (2019). What is a startup firm? A methodological and epistemological investigation into research objects in economic geography. Geoforum, 107, 77-87.

David, M & Sutton, C. D. (2011) *Social Research. An Introduction.* SAGE publications, 2nd edition.

Dedehayir, O., & Steinert, M. (2016). The hype cycle model: A review and future directions. Technological Forecasting & Social Change, 108, 28-41.

Eriksson, P., & Kovalainen, A. (2015). Qualitative methods in business research (Second ed.).

Füller, J., Hutter, K., Wahl, J., Bilgram, V., & Tekic, Z. (2022). How AI revolutionizes innovation management–Perceptions and implementation preferences of AI-based innovators. Technological Forecasting and Social Change, 178, 121598.

Haque, M. U., Dharmadasa, I., Sworna, Z. T., Rajapakse, R. N., & Ahmad, H. (2022). " I think this is the most disruptive technology": Exploring Sentiments of ChatGPT Early Adopters using Twitter Data. arXiv preprint arXiv:2212.05856.

Hill, C., & Rothaermel, F. (2003). The Performance of Incumbent Firms in the Face of Radical Technological Innovation. The Academy of Management Review, 28(2), 257-274.

Ivanov, S. (2019). Ultimate transformation: how will automation technologies disrupt the travel, tourism and hospitality industries?. Zeitschrift für Tourismuswissenschaft, 11(1), 25-43.

Katz, R. L. (2002). Creative destruction: business survival strategies in the global Internet economy. Mit Press.
King, M. R. (2022). The future of AI in medicine: a perspective from a Chatbot. Annals of Biomedical Engineering, 1-5.

Klusak, P., Kraemer, M., & Vu, H. (2022). First‐mover disadvantage: The sovereign ratings mousetrap. Financial Markets, Institutions & Instruments, 31(1), 3-44.

Lincoln, Y., & Guba, F. (1985). Naturalistic Inquiry. Beverly Hills: Sage.

Mayahi, S., & Vidrih, M. (2022). The Impact of Generative AI on the Future of Visual Content Marketing. arXiv preprint arXiv:2211.12660.

Metrick, A., & Yasuda, A. (2021). Venture capital & the finance of innovation (Third ed.).

Michelle, B., & Gemilang, M. P. (2022). A Bibliometric Analysis of Generative Design, Algorithmic Design, and Parametric Design in Architecture. Journal of Artificial Intelligence in Architecture, 1(1), 30-40.

Nelson, R. (1962). The link between science and invention: The case of the transistor. In The rate and direction of inventive activity: Economic and social factors (pp. 549-584). Princeton University Press.

Nieto, M., Lopéz, F., & Cruz, F. (1998). Performance analysis of technology using the S curve model: The case of digital signal processing (DSP) technologies. Technovation, 18(6), 439-457.

Norlén, L., & Selander, H. (2021). Är AI din nya designpartner?: En explorativ studie av designers upplevelser av att samskapa med en generativ AI.

Patel, R., & Davidson, B. (2011). Forskningsmetodikens grunder: Att planera, genomföra och rapportera en undersökning. (4., [uppdaterade] uppl. ed.). Lund: Studentlitteratur.

Philipp Hacker, Andreas Engel, & Theresa List. (2023). Understanding and Regulating ChatGPT, and Other Large Generative AI Models. Verfassungsblog, (2366-7044), Verfassungsblog, 2023 (2366-7044).

Pride, J. (2018). Unicorn Tears. Newark: Wiley.

Rana, N. P., Chatterjee, S., Dwivedi, Y. K., & Akter, S. (2022). Understanding the dark side of artificial intelligence (AI) integrated business analytics: assessing firm's operational inefficiency and competitiveness. European Journal of Information Systems, 31(3), 364-387.

Rai, N., & Thapa, B. (2015). A study on purposive sampling method in research. Kathmandu: Kathmandu School of Law, 5.

Rowley, J. (2002). Using case studies in research. Management research news, 25(1), 16-27.

Shepherd, D. A., & Majchrzak, A. (2022). Machines augmenting entrepreneurs: Opportunities (and threats) at the Nexus of artificial intelligence and entrepreneurship. Journal of Business Venturing, 37(4), 106227.

Stadler, C., Rajwani, T., & Karaba, F. (2014). Solutions to the exploration/exploitation dilemma: Networks as a new level of analysis. International Journal of Management Reviews, 16(2), 172-193.

Sterne, J. (2017). Artificial intelligence for marketing: practical applications. John Wiley & Sons.

Stewart, D. W., & Kamins, M. A. (1993). Secondary research: Information sources and methods (Vol. 4). Sage.

Syam, N., & Sharma, A. (2018). Waiting for a sales renaissance in the fourth industrial revolution: Machine learning and artificial intelligence in sales research and practice. Industrial marketing management, 69, 135-146.

Szabo, V., & Strang, V. R. (1997). Secondary analysis of qualitative data. Advances in nursing science, 20(2), 66-74.

Vashisth, S., Linden, A., Hare, J., & Krensky, P. (2019). Hype Cycle for Data Science and Machine Learning, 2019. Gartner Research.

Vecchiato, R. (2015). Creating value through foresight: First mover advantages and strategic agility. Technological Forecasting & Social Change, 101, 25-36.

Walliman, N. (2010). Research methods: The basics. Routledge.

Wasserman, N. (2012). The founder's dilemmas anticipating and avoiding the pitfalls that can sink a startup. Princeton: Princeton University Press.

References retrieved from the Internet

Boston Consulting Group (2023). Generative AI. Retrieved March 28, 2023 from https://www.bcg.com/x/artificial-intelligence/generative-ai

Ekonomifakta (2021). Nystartade företag. Retrieved January 18, 2023 from https://www.ekonomifakta.se/fakta/foretagande/entreprenorskap/nystartade-foretag/

Entrepreneur (2023). Small Businesses Have Fewer Resources Than Big Companies. Here's How AI Can Fill the Gaps. Retrieved March 20, 2023 from https://www.entrepreneur.com/science-technology/how-ai-can-help-small-businesses-do-more-in-less-time/445042

Entrée Capital (2022). Generative AI: Building to Last | How to Build a Future-Proof Startups. Retrieved February 18, 2023 from https://www.youtube.com/watch?v=XO0leUThgdU

Forbes (2022). What is a startup?. Retrieved March 21, 2023 from https://www.forbes.com/advisor/business/what-is-a-startup/

Frase (2019). What is answer engine optimization. Retrieved February 21, 2023 from https://www.frase.io/blog/what-is-answer-engine-optimization/

Investopedia (2022) What a Startup Is and What's Involved in Getting One Off the Ground. Retrieved March 18, 2023. https://www.investopedia.com/terms/s/startup.asp

Scribbr (2023). Exploratory Research | Definition, Guide, & Examples [Dataset]. Retrieved February 16, 2023 from https://www.scribbr.com/methodology/exploratory-research/

Appendix - Form of Consent

We are excited to invite you to a qualitative interview conducted by Olivia Hiljegren and Filippa Gyllensvärd as a part of their Master Thesis within Generative AI at Gothenburg University. Your participation is essential and valued. To ensure that you are fully informed, please take the time to read this form carefully. It outlines the interview process, your rights, and how information is kept confidential. Once you have read through the form and agree to the conditions, please sign it and return it to us before the scheduled interview. Thank you for your time and consideration.

1. The interview will be organized using Google Meet, where queries will be posed based on your experience, knowledge, and insights within generative. The interview will take around 30-45 minutes.
2. Your involvement is optional. You can deny any inquiry or discontinue your participation at any given moment. If you choose to leave, the data that has been collected up until that point will be removed and not used in the research.
3. You can rescind your participation after the conversation has happened. If that is the case, the gathered information will be purged from the research. This is only applicable until May 29th, 2023, as the study will have been finished and further changes cannot be done by the authors.
4. The interview will be audio recorded, but there will not be any video recording. The sound recording will only be accessible by Olivia and Filippa and the material will therefore only be utilized for transcription purposes only. After transcription, the recording will be erased.
5. To protect your identity, you, and your company name will not be seen in any part of the research. Nor will any information that discloses who you are visible. The details will, for example, be referred to names with the first letter A, B, C, D, etc. together with company A, B, C, D.
6. You can view any direct quote that has been taken from your involvement, and amend any potential misinterpretations before the study is finalized.

I hereby confirm that I have thoroughly read and comprehended the above statements. I am aware that my confidentiality will be vigilantly guarded. By signing this document, I agree to take part in this interview and that my remarks may be utilized in this study.

Participant Name	Researcher Name	Researcher Name
Date	Date	Date