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## **AI and competitive strategy for SMEs**

Bachelor's thesis

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I hereby declare that I have compiled the thesis independently  
and all works, important standpoints and data by other authors  
have been properly referenced and the same paper  
has not been previously presented for grading.

The document length is 8509 words from the introduction to the end of the conclusion.

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## **ABSTRACT**

This study aims to discover how small-medium enterprises (SMEs) implement and use generative artificial intelligence (AI) to gain a competitive advantage. The research questions for this study are: What impact does AI adoption have on SMEs' acquisition of a competitive advantage and what are the benefits of AI that most impact SMEs' competitive strategies?

Supported by previous studies, theories, and the review of literature on AI implementation and usage within organisations an online questionnaire was distributed to Finnish SMEs which gathered a total of 26 responses. The questionnaire was distributed via email and the recipients were asked to answer questions regarding changes in five key areas post AI implementation. These five key areas included AI implementation and strategic impact, operational and financial performance, customer relations and market dynamics, innovation and workforce dynamics and challenges and broader impact.

The nonprobability sampling technique, convenience sampling, was used for this quantitative research combined with a descriptive analysis of the results.

Findings show that while AI is mainly used for enhancing innovation, operational efficiency and customer engagement, its role in significantly altering market share and driving revenue growth remains limited. The main obstacles to efficient AI adoption include high implementation costs, regulatory challenges, technical difficulties, and a lack of skilled personnel, which have been identified as significant obstacles preventing SMEs from fully leveraging AI to its full strategic potential. The study contributes to the existing literature on AI and its implementation for SMEs. It highlights that managers and policymakers need to be up to date about AI trends and develop supportive policies that facilitate AI adoption in SMEs to gain a competitive advantage.

**Keywords:** artificial intelligence, competitive strategy, small-medium enterprises

## INTRODUCTION

Small and medium-sized enterprises (SMEs) are seen as the backbone of many economies, whether referring to a random state or the global economy. These companies represent a vital source of economic growth, dynamics and flexibility in advanced industrialised nations. The primary justification for this is that SMEs account for between 95 to 99% of all companies. The Organisation for Economic Cooperation and Development (OECD) states that SMEs represent more than 95% of enterprises and ensure 60-70% of the jobs (*Robu. n.d*), and the use of AI has the potential to change their strategic course drastically.

In the global business landscape, small and medium enterprises encounter numerous challenges that impact their sustainability and performance. These obstacles are divided into three categories: sustainability, global, and technological challenges, emphasising that SMEs must keep up with technological changes to be more competitive (Prasanna et al., 2019). One of the most recent and widely discussed technological booms involves artificial intelligence (AI). AI has become a disruptive force in the quickly changing world of global business, bringing with it new levels of efficiency, creativity, innovation, and competitive dynamics (Cockburn et al., 2018).

Fundamentally AI involves the development of highly complex machines and systems that are capable of performing similar tasks that humans do such as understanding natural language, pattern recognition, decision making and learning from experience (Harkut & Kasat, 2019). These technologies have the potential to drastically change numerous aspects of human life and our understanding of intelligence itself and present new possibilities for automation, and data-driven decision-making all of which can have a significant impact on companies' competitiveness and economic growth (Salais & Tóth, 2024).

The integration of AI technology offers SMEs a unique opportunity to improve their operational capabilities and strategic positioning however the adaptation of these digital technologies remains low even if it would be highly relevant for the business (Wei & Pardo, 2022).

Generative AI is a new topic for a fair majority of people. As with anything new, there are many obstacles to overcome, including, but not limited to, the high cost of implementation, the scarcity of AI talent, and the difficulties associated with data management (Gao et al.,2023). According to a study conducted by Agrawal (2023), organisations seem to place more emphasis on the possible problems and risks of generative AI technologies than on the possible advantages these systems may have over competitors. The study suggests that organisations tend to prioritise addressing the challenges posed by generative AI before considering its potential benefits when discussing its adaptation.

Despite the number of studies that have shown generative AIs' potential benefits, including the references mentioned above, further investigation is purposed by (Lu et al.,2022) to assist SMEs in better utilising the opportunities enabled by AI technologies for continued development, ultimately helping SMEs enhance their competitive strategy. Thus, guidance to SMEs on AI's benefits in designing a competitive strategy needs to be investigated further. This paper aims to delve into this problem and provide solutions for how AI can be used by SMEs when designing their competitive strategies.

The research questions have been designed to answer this problem and are the following:

- What impact does AI adoption have on SMEs' acquisition of a competitive advantage?
- What are the benefits of AI that most impact SMEs' competitive strategies?

This study aims to discover how small-medium enterprises (SMEs) implement and use generative artificial intelligence (AI) to gain a competitive advantage.

The author's motivation for this research comes from his interest in AI, SMEs, and the possibilities that lie ahead for those capable of adapting to this new and exciting technology. It is also important for the author to figure out in what ways SMEs are already adapting AI to enhance their day-to-day business.

The study uses a quantitative approach, using a questionnaire aimed at CEOs and higher management of SMEs in Finland, to further understand how companies are using and utilising generative AI to gain a competitive advantage in their respective industries.

The research paper includes three parts: the theoretical background, the research methodology, and an empirical analysis, which explains the results and findings.

The theoretical background includes an introduction to AI and competitive advantage for SMEs, focusing on previous studies.

The second chapter explains the research methodology used and describes how data was sampled, collected, and designed. The third chapter consists of the analysis of the questionnaire and the results of the research. After the third chapter, the author will provide the reader with a conclusion of the findings of the research, limitations, recommendations for further research, as well as recommendations for companies adopting generative AI into their day-to-day business activities.

# **1. Theoretical Framework**

The first chapter provides the reader with the theoretical background, which is collected from previous research and academic literature. The theoretical background gives the reader an introduction to generative AI and competitive advantage for SMEs.

## **1.1. Competitive strategy**

A company's competitive strategy is its deliberate efforts to establish a unique position for itself in the market to gain a long-term competitive edge over its rivals (Kay, 2014). This typically involves strategically seeking cost leadership, differentiation or a focused approach targeting specific market segments (Kay, 2014). The objective is to obtain a competitive edge that is difficult for competitors to replicate (Kay, 2014).

To achieve an advantageous position in relation to one's competitors and navigate through market dynamics, companies need to have robust competitive strategies and understand their competitors' behaviours and competitive strategies (Otinashvili, 2022). These strategies centre around identifying and using the companies' fundamental competencies, understanding customer needs, and continuously striving for innovation that further meets these needs more effectively (Otinashvili, 2022).

(S.S., 2020) emphasises that the core of competitive strategy is identifying the abilities and resources required to draw clients and strengthen market position. S.S (2023) also stresses the significance of managers' viewpoints and actions, especially from a strategic point of view. Several frameworks and models have been developed over the years to help people understand and successfully use competitive strategies. Porter's Generic strategies—cost leadership, distinctiveness, and focus—provide a clear framework for thinking about strategic alternatives. Every strategy targets a distinct market segment and involves different approaches to competing in the market (Porter, 1997).

In conclusion, a thorough grasp of business competitive strategy involves a holistic strategy that considers the organisation's internal capabilities, its position in the market, and the dynamics of



the industry. Developing and implementing effective competitive strategies is imperative for businesses looking to achieve and sustain market leadership.

### **1.1.1. Competitive strategy and AI for SMEs**

AI stands as a transformative force for SMEs, giving them a competitive edge in a number of crucial areas that are essential to their growth and sustainability (Lu et al., 2022). By leveraging AI, SMEs have the possibility to gain a substantial competitive advantage by utilising AI not only to improve operational efficiency but also to promote innovation, customise consumer experiences and make data-driven decisions (Brynjolfsson et al., 2023).

It is worth noting that according to (Soni, 2023), AI technologies might lose their effectiveness, especially in fiercely competitive marketplaces, which could become a problem for SMEs; however, rapid implementation of AI may help level the playfield and make it more challenging for individual businesses to use AI to gain a competitive edge (Soni, 2023). This implies that implementing AI alone will not be sufficient to increase revenue, especially in sectors where competition is high, and competitors can adopt comparable technologies quickly. SMEs need to adopt a more strategic approach to integrating AI into their competitive strategies (Soni, 2023). This highlights the importance of looking at AI as a tool that is part of a broader strategy that encompasses other objective factors rather than viewing it just as a direct growth driver.

Sharma (2024) also highlights that effective deployment of AI in highly competitive markets requires more of a strategic approach rather than a purely technological one. SMEs should carefully consider market dynamics and develop their competitive advantage through artificial intelligence that goes beyond keeping up with competitors; this would involve AI integration into a broader strategy, considering technological readiness and skilled human capital (Sharma, 2024).

Sustainability is becoming more and more relevant as time passes, and companies have to adjust their strategies to meet new sustainability regulations that are being presented to them; according to (Gupta et al., 2023), AI can positively influence organisational sustainability and assist in environmental development. However, it is not just about following guidelines. According to a Forbes article (Petro, 2021), a survey conducted by DoSomething, a social impact consultancy, revealed that 75% of Gen Z respondents stated they wanted to see brands and companies

guaranteeing the safety of their workers and customers. According to the report, Gen Z will be the first to notice if a brand is not being authentic.

## **1.2 Artificial intelligence**

This chapter aims to provide a comprehensive overview of what artificial intelligence is and introduces concepts such as generative AI and deep learning.

The term artificial intelligence was coined in 1956, and since then, its popularity has grown exponentially thanks to technological advances in algorithms, processing power, storage and increased data volumes (SAS, 2023). During the 1950s, early AI research focused on symbolic approaches and problem-solving (SAS, 2023). The US Department of Defence became interested in this kind of work in the 1960s and began training computers to simulate fundamental human reasoning (SAS, 2023). In 2003 the Defence Advanced Research Projects Agency (DARPA) developed intelligent personal assistants, long before Siri, Alexa or Cortana were well known (SAS, 2023). This early work made the automation and formal reasoning that we see in computers today, such as decision support systems and smart search, possible (SAS, 2023).

Artificial intelligence technologies allow machines to perform human-like tasks, adapt to new inputs, and learn from experience (SAS, 2023). Most AI examples discussed today, from chess-playing computers to self-driving cars, mainly rely on deep learning and natural language processing.

Algorithms (such as ChatGPT) that can produce new content, such as audio, code, images, text, simulations and videos are referred to as generative artificial intelligence (MCKinsey&Company, 2023). Generative AI is founded on the principles of generative modeling, which is distinct from discriminative modeling (Feuerriegel et al., 2023b). Discriminative modelling employs boundary learning to categorise data points into distinct groups. On the other hand, generative modelling aims to comprehend the actual distribution of data (Feuerriegel et al., 2023b). A generative AI model is capable of building new data samples based on patterns it has discovered by utilising machine learning architectures, such as deep neural networks. Deep neural networks, a more advanced version of traditional neural networks, are instrumental in tackling complex tasks (La Malfa et al., 2022). While traditional neural networks can handle simple tasks, deep neural

networks are indispensable for intricate challenges like image processing, computer vision, and natural language processing (La Malfa et al., 2022). This is where generative AI comes into play, enhancing the capabilities of deep neural networks.

A generative AI system comprises all the necessary infrastructure for both data processing and user interaction (Feuerriegel et al., 2023b). These systems are then used in practical situations like content creation, code development and search engine optimisation (SEO), which promotes innovation in a variety of industries. More complex generative AI models, such as those in the GPT family, often combine different approaches and techniques. They may start off with a generative pre-training stage that is designed to capture the distribution of data after they undergo a discriminative fine-tuning stage to adapt to specific tasks that could be in the form of document classification and question answering (Feuerriegel et al., 2023b).

A good example would be the now widely known ChatGPT, which integrates generative modelling, discriminative modelling, and reinforcement learning when producing outputs (Feuerriegel et al., 2023b). To get a more comprehensive view of how generative AI operates and is integrated into various applications, we can have a look at the following figure (see Figure 1), which outlines the journey from AI models suitable for different data types (GPT-4 for text and DALL-E2 for images), to system-level implementations (conversation agents) and application level solutions that address more specific business and stakeholder needs (content creation, SEO and customer service).

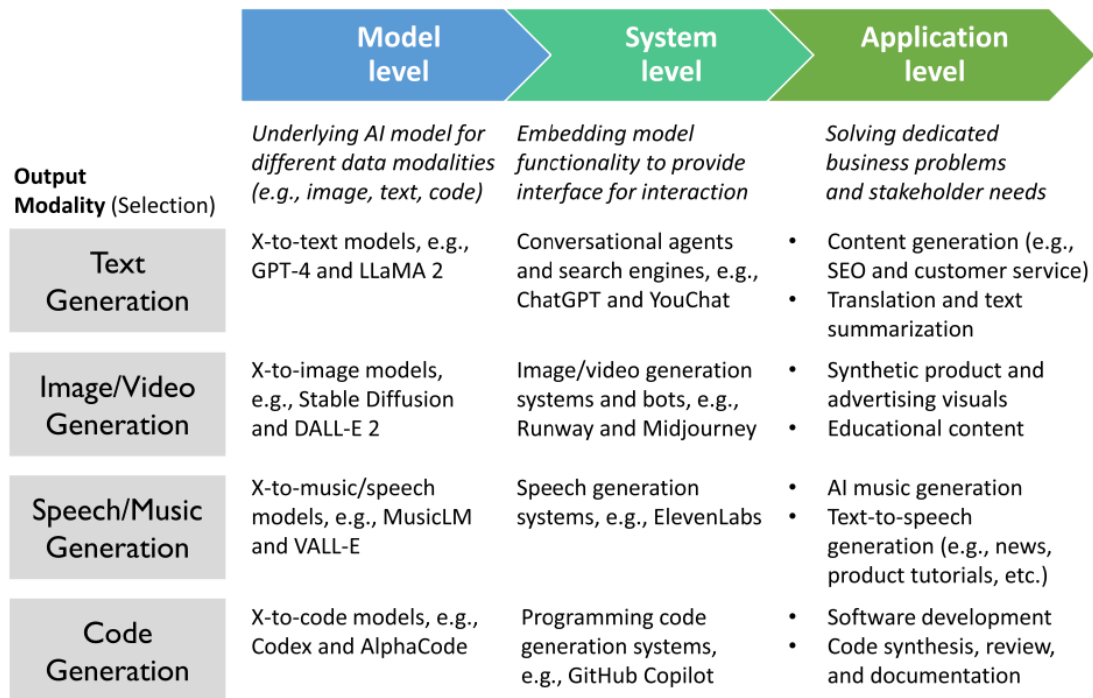


Figure 1. A model-, system-, and application-level view on generative AI

Source: Feuerriegel et al. (2023b, p. 113)

The Model Level has a collection of distinct AI models created for different types of data, including text generation (GPT-4 and LaMDA 2), image/video generation (Stable Diffusion and DALL-E 2), and code generation (Codex and AlphaCode).

At the System Level, these models are embedded into systems that offer interactive interfaces, like systems that generate speech (EleventLabs), video/image generation bots (Runway, Midjourney), conversational agents (ChatGPT, YouChat), and programming code generation systems (GitHub Copilot).

Lastly, the Application Level resolves particular business issues and meets the needs of stakeholders. Examples of these include content creation for search engines, customer support, translation, and text generation, to name a few.

One of the most well-known generative AI applications is undoubtedly Chat GPT. Chat GPT is a sophisticated natural language processing AI developed by OpenAI (Feuerriegel et al., 2023b). The application is renowned for its capacity to comprehend and produce text that resembles that of a human, depending on what input is prompted to it. It is a member of the GPT (Generative Pre-trained Transformer) family and is designed to perform various linguistic activities, such as summarising, translating, writing assisting and more. ChatGPT is significant in that it can ultimately change how humans engage with technology; this is done by enabling more natural and human-like interactions with AI systems (University of Central Arkansas, n.d). Generative AI models of this type are trained on a wealth of information from the internet, including websites, books and news articles, to name a few.

Both reinforcement learning and supervised learning have been used to improve the language model. What's special about ChatGPT is the application of Reinforcement Learning from Human Feedback (RLHF) (Ortiz, 2024).

ChatGPT is said to have many benefits, a few of which, according to Hetler (2023), are:

- Efficiency -> Chatbots with AI can do repetitive and monotonous tasks, freeing up employees to concentrate on more complex and strategic duties.
- Cost savings -> The use of AI chatbots can reduce costs since the chatbot can manage duties that otherwise could require hiring and training additional employees.
- Better response time -> ChatGPT provides instant responses, reducing search time for users seeking assistance.

However Heteler (2023) mentions that there are some limitations as well, some of which are:

- It does not fully understand the complexity of human language -> ChatGPT is trained to produce words based on input. Due to this, responses might come across as shallow and vague.
- Responses can sound like a machine or unnatural -> Words like "the" or "and" may be overused by ChatGPT because it anticipates the next word. Due to this, content produced by AI still needs to be revised and edited by humans to make it flow more naturally, like human writing.

### **1.2.1 Applications of artificial intelligence in SMEs**

The competitive environment for SMEs is changing due to generative AI's innovative applications in various industries (Paul et al., 2023). The technology is bringing creativity and logical problem-solving into company operations, according to Qian (2023), in addition to automating repetitive chores. AI's capability to think and create gives management and finance staff more time to focus on higher-value and more strategic duties, resulting in increased productivity and promoting an innovative culture inside the company (Qian, 2023).

SMEs increasingly use advanced computational tools to develop new products, tailor unique customer experiences, and craft innovative marketing strategies. This type of technology enables the generation of text and images that can be used in a creative marketing project, for instance, in making videos and images to promote products. SMEs with tight budgets will find it especially helpful that they no longer need to hire marketing experts/agencies to create content. Furthermore, this type of technology offers a more imaginative and adaptable substitute for conventional marketing tools like predefined templates or fixed graphics (Wahid et al.2023) (Kanbach et al.2023) (Suryadevara2020).

Furthermore, transitioning from adaptive to generative learning within SMEs, especially in contexts like network alliances, is a critical development. Li (2016) discusses how this change affects and improves information transfer, organisational learning, and competitive advantage. Generative learning facilitates the development of shared identities and a vast understanding of industry-specific contexts, helping SMEs navigate complex ecosystems more effectively.

### **1.2.2 Benefits and limitations of artificial intelligence**

AI, a potential game changer in the digital age, offers numerous advantages. However, it's important to acknowledge the limitations that accompany these benefits. The potential for AI to be used maliciously is still largely unexplored, underscoring the need for careful consideration, particularly in the application and implementation of generative AI (Houde et al., 2020).

The role of AI in boosting productivity across various sectors, including software engineering and customer service, is one of its most significant benefits (Brynjolfsson et al., 2023). For instance, the deployment of conversational AI-based assistants has been shown to increase productivity by

an average of 14%, with the most significant impact on low-skilled workers (Brynjolfsson et al., 2023). As Brynjolfsson et al. (2023) explain, this improvement is attributed to AI's ability to disseminate the complex knowledge of experienced workers, thereby aiding new employees in their learning curve and enhancing overall efficiency.

Machine learning (ML) is a computer science and artificial intelligence subfield. It concentrates on using data and algorithms to enable AI to imitate human learning processes, gradually improving its accuracy (IBM, n.d). According to Shepherd & Majchrzak (2022), machine learning, which is a subset of AI, has the capability to enable computers to gain knowledge from experience, where things like patterns are recognised in data over time, hence improving accuracy in tasks like categorisation based on feedback. Shepherd & Majchrzak (2022) also mention that deep learning, which was covered earlier, which is another AI approach, has the capacity to extract features from raw data by only using algorithms without requiring human-labelled training data, hence enabling the analysis and deeper understanding of large and complex data sets autonomously.

Despite its advantages, AI faces several challenges and limitations. Ethical concerns, such as the creation of fake media, data protection, privacy, and ownership of AI-generated content, are critical considerations (Ali et al., 2023). The potential for misuse and the need to educate users about the operation and ethical implications of these technologies are also highlighted (Ali et al., 2023). The importance of responsible AI governance, involving multiple stakeholders to ensure a safe, inclusive, and sustainable future, is underscored (Sharma, 2024).

Challenges with AI implementation that may lead to a reduced success rate and inefficiency within the implementation process include the following: lack of expertise, integration difficulties, privacy issues and concerns and high costs (Schönberger, 2023). It is advisable to take these challenges into account in order to support the smooth deployment of AI, resulting in a smoother integration process that will unveil the full potential of these technologies (Schönberger, 2023).

Shepherd & Majchrzak (2022) also points out that some limitations include the fact that the data input for AI can be inherently biased. Since machines are most often believed to be unbiased, this can perpetuate and amplify biases in AI decision-making. It is also mentioned that, as it stands, AI is limited in interpreting abstract concepts and understanding emotions, which are areas where humans excel.

## **2. Research Methodology**

The second chapter explains the research design and plan for the thesis. It also clarifies the sample used, the method of data collection, and the analysis of the data.

### **2.1. Research Design and Plan**

The aim of this research is to discover how small-medium enterprises (SMEs) implement and use generative artificial intelligence (AI) to gain a competitive advantage.

. The research uses quantitative research methods due to the fact that the authors want to gather data on what quantifiable changes occur in the business strategy of SMEs post AI implementation. Since this research looks for quantifiable data, it would be very difficult to gather that data using a qualitative method; hence, quantitative research methods were selected. In this thesis the author uses a quantitative approach through a questionnaire as a way to gather data of the research topic.

The questionnaire for this thesis consisted of five “General information” questions. The answerer had the option to name their organisation and disclose their position in the company and the organisation's industry sector, among other things. The questionnaire then follows by presenting the responder with 19 close ended questions and lastly the respondents have the opportunity to comment on anything they wish. One of the most basic and widely used psychometric instruments in social science and educational research is the Likert scale (Joshi et al., 2015). The questionnaire included 11 questions where a Likert scale from 1 = significantly positive outcome, 3 = neutral, 5 = significantly negative outcome was used.

The 19 questions presented gave the author the necessary data to make conclusions in regards to the research question and aim. The author designed the questionnaire in order to find out how SMEs in Finland use AI and how it has impacted their business.



The questions presented in the questionnaire were designed to suit this research and inspiration and ideas were gathered from (Schönberger, 2023), (Tuominen, 2019) and (Ångström et al., 2023). After the questionnaire plan was completed, the author received improvement recommendations from the supervisor to further improve and to make the questionnaire more comprehensible and clear for both the author and to the respondents. The author decided to use convenience sampling due to the fact that to gather as much data as possible the participants are selected based on their availability and accessibility (Etikan et al., 2016). This helped the author to gather data easily and quickly due to the time constraint.

Using the non-probability sampling technique, referred to as convenience sampling, members of a target population are chosen based on certain set criteria (Etikan et al., 2016). These set criteria include things like availability and willingness to engage in the questionnaire (Etikan et al., 2016). The questions used in this research can be found in the appendix.

### **2.1.1 Sample and analysis**

This research sample consists of 26 Finnish SMEs. As can be seen from Figure 2, the questionnaire was shared with 63 Finnish SMEs, and 26 of the 63 organisations participated in the questionnaire. This resulted in a 41 % response rate. The 63 companies in this study were selected based on the accessibility of their CEOs and higher management from whom the author had email contacts. Additionally, all the selected companies can be recognized as SMEs.

Answers were gathered from 18.3.2024 until 15.4.2024, and the author reached out and shared the questionnaire through email. The author understands that 26 responses is a quite small number for a questionnaire; however due to the novelty of the topic and the time constraint these were the only number of responses the author could manage to gather.

Figure 2 shows that 10 of the respondents were CEOs of Finnish SMEs, followed by 3 CFOs. The data shows that the author has reached the desired target group of higher management positions within Finnish SMEs. The figure also shows the distribution of responses across different industry sectors. The IT industry makes up the largest segment out of the total 26 responses accounting for 4 companies. This is closely followed by marketing and legal sectors.

<b>Respondents job title</b>	<b>Frequency</b>
CEO	10
COO	2
CTO	1
CFO	3
CIO	1
CRO	1
CMO	1
Head of HR	2
Head of Sales	1
Senior Account Manager	1
Founder	1
Partner	1
Advisor	
<hr/>	
<b>Industry sectot</b>	
Wholesalor	2
Hospitality	1
IT	4
Commerce	1
Import	2
Telecom	1
Contruction	2
Legal services	3
Professional services	1
Real estate	2
Finance	1
IVD diagnostics	1
Marketing	3
Advertising	1
Music	1
<i>Total</i>	<i>26</i>

Figure 2: Respondents job titles and industry sectors

Source: Composed by the author

The author utilized Google Forms to gather questionnaire responses for this study. The key trends in the adoption and effects of AI implementation inside SMEs were analysed using descriptive analysis of the data.

### **3. Empirical Analysis**

In the third chapter, the author introduces the quantitative data analysis of the questionnaire data and discusses the results. In the first part, the descriptive analysis of the research will be presented.

The questionnaire consisted of 24 questions, of which 19 were related to artificial intelligence. The author will start off by introducing some basic data from the questionnaire, after which the 19 AI-related question results will be divided into five different groups

1. AI implementation and strategic impact.
2. Operational and financial performance.
3. Customer relations and market dynamics.
4. Innovation and workforce dynamics.
5. Challenges and broader impact.

Within these groups, the author will provide the reader with charts and brief observations regarding the findings related to the questions.

Following the first part, the author will discuss the topic and provide recommendations.

#### **3.1. Results analysis**

The questionnaire was shared with 63 Finnish SMEs. The companies were asked to share the survey to other parties the receivers knew if they thought that they would fit the research based on the instructions given by the author.

The questionnaire received 26 responses in total. Nine respondents wished that their answers would be kept confidential.

The first four questions consisted of basic knowledge regarding the organisation, such as the name of the organisation, which was an option question, the position of the respondent within the company, the industry sector of the company and if the respondent wishes to keep the answers confidential and only for data gathering purposes or if the author is allowed to reference the answers provided by the company.

## Group 1: AI implementation and strategic impact

AI implementation and strategic impact investigate how Finnish SMEs have succeeded in implementing AI into their operations and what kind of strategic impact those implementations have resulted in. In group one the author will introduce and analyse the results consisting of five questions.

As Figure 3 shows, the majority of the respondents, roughly 46%, agreed with the statement, signifying a positive view of AI implementation within the organisation. Close behind ro, roughly 23% of the participants selected ‘strongly agree’, indicating a highly favourable endorsement of AI technologies. When taken as a whole, these answers show that 69% of the organisations that participated in the questionnaire positively acknowledged the application of AI technology within their operations. On the other hand, a smaller proportion of organisations hold reservations about AI integration. In particular, 11.5% of the respondents remain neutral, ‘neither agree nor disagree,’ while another 11.5% indicate disagreement. In addition, 7.7% of respondents answered ‘strongly disagree,’ indicating a high level of dissatisfaction with effectively implementing AI in various aspects of their operations.

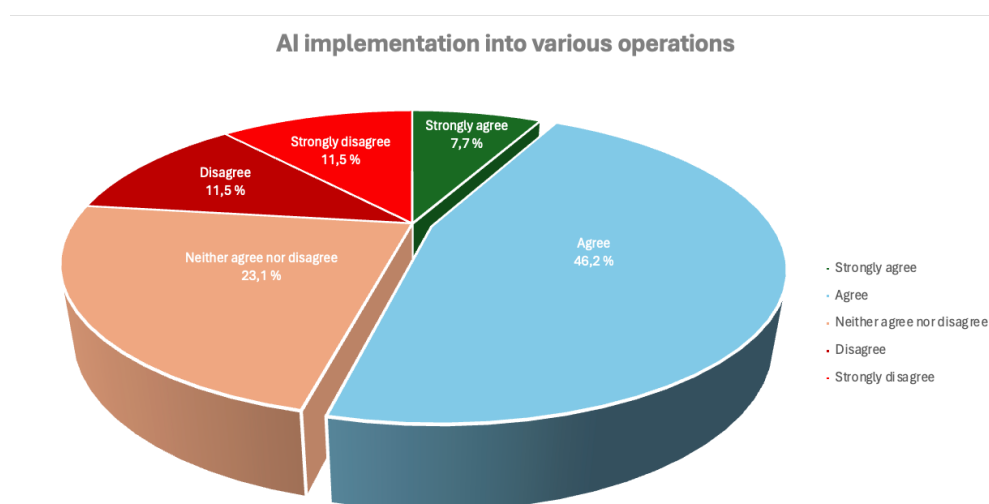


Figure 3. AI implementation into various operations within the organisation (n=26)

Source: Composed by the author

Looking at Figure 4, we can see that out of the 26 organisations that participated in the research, the main objective of AI implementation, with 21 responses was to improve operational efficiency as the primary objective, followed by the drive for innovation, which gathered 9 responses. Enhancing customer engagement was also a noteworthy objective with 7 answers.

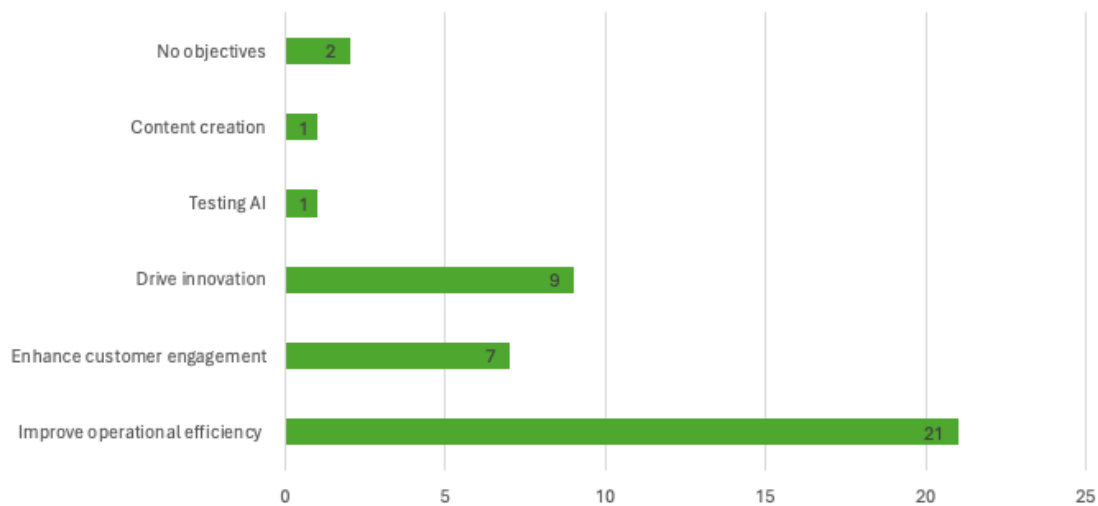


Figure 4. Primary objectives for AI implementation (n=26)

Source: Composed by the author.

In the following question, respondents were asked to rate on a scale of 1 to 5 how significantly AI implementation has impacted their business strategy. 1 represents significantly positively, while 5 represents significantly negatively.

As seen in Figure 5, interestingly, no responders chose 4 or 5, suggesting that AI implementation has not had any negative impact on their business strategy. The impact was scored as neutral (3) by 50% of the respondents, indicating that AI implementation has not had an impact on their business strategy. However, 38.5% of respondents thought that implementing AI had a somewhat favourable impact (2), and 11.5% answered that AI had a significantly positive impact on their business strategy.

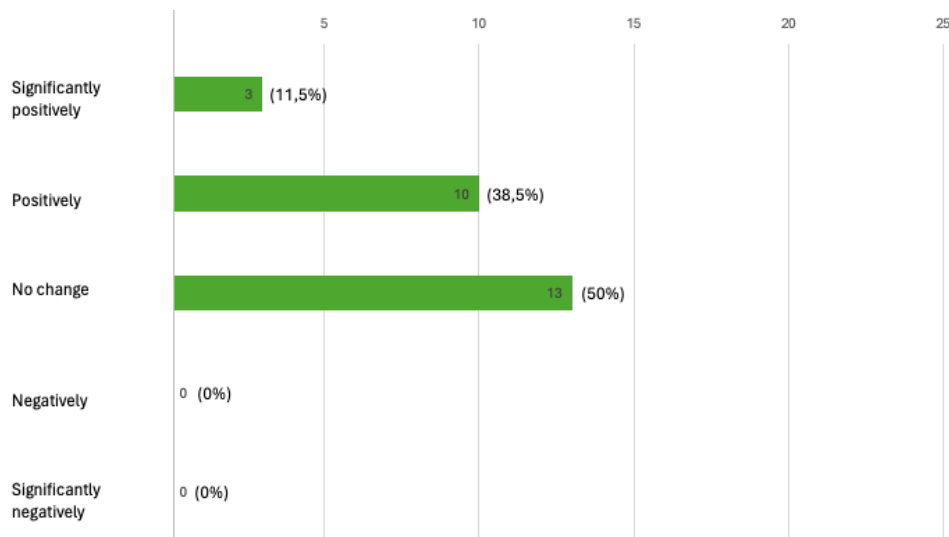


Figure 5. AI implementation impact on business strategy (n=26)

Source: Composed by the author

In the following question, respondents were asked to rate on a scale of 1 to 5 whether AI implementation has enhanced their competitive advantage. 1 represents greatly enhanced, while 5 represents greatly reduced.

Most respondents, 53.8%, responded neutrally to the question, rating it a 3. As seen in Figure 6, 42.3% believe that AI has enhanced their competitive advantage, rating it a 2, while only one respondent felt that AI implementation had slightly reduced the organisation's competitive advantage. The results indicate a predominantly positive impact of AI on competitive advantage among the participants.

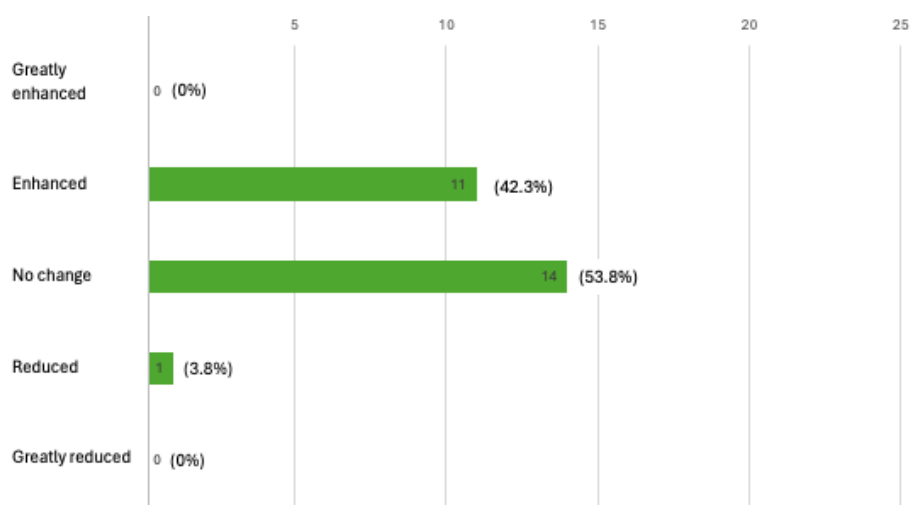


Figure 6. Has AI implementation enhanced competitive advantage (n=26)

Source: Composed by the author

In the following question, respondents were asked to rate on a scale of 1 to 5 whether AI implementation has enhanced their market share. 1 represents gained market share, while 5 represents lost a substantial amount of market share.

A vast majority, 92.3% of the respondents, perceive their market share to be unchanged since implementing AI, while 7.7% believe that they have gained some market share. As seen in Figure 7, there are no responses for losing market share or massive gains in market share, suggesting a general stability in Finnish SMEs' market share post-AI implementation.

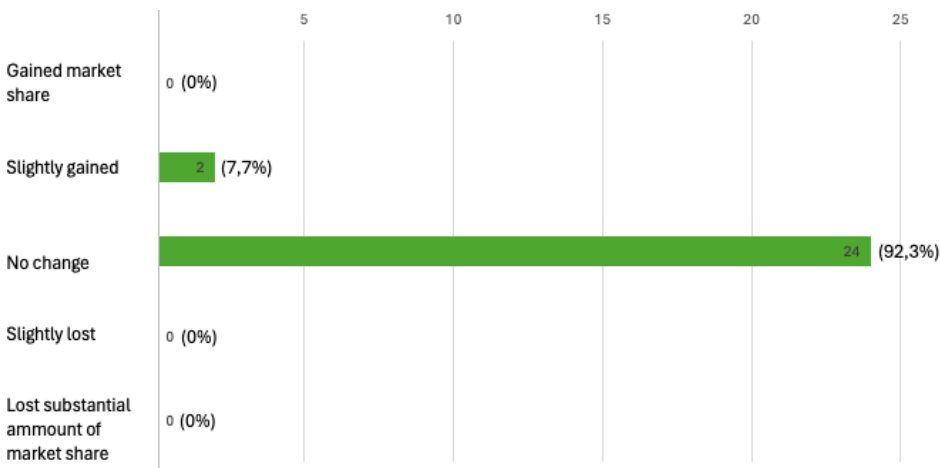


Figure 7. Changes in organisations market share post AI implementation (n=26)

Source: Composed by the author

## Group 2. Operational and financial performance

In group two, the author will present relevant data from the questionnaire, which consists of four questions concerning operational and financial performance post-AI implementation.

Figure 8 shows that nearly half, 42.6%, reported an increase of less than 10% in operational efficiency post-AI implementation. A further 30.8% responded that no change in their operational efficiency had been seen, while 23.1% observed an increase of 10-20%. There are no indicators of a decrease in operational efficiency, underscoring AI's predominantly positive and neutral impact on operational performance.

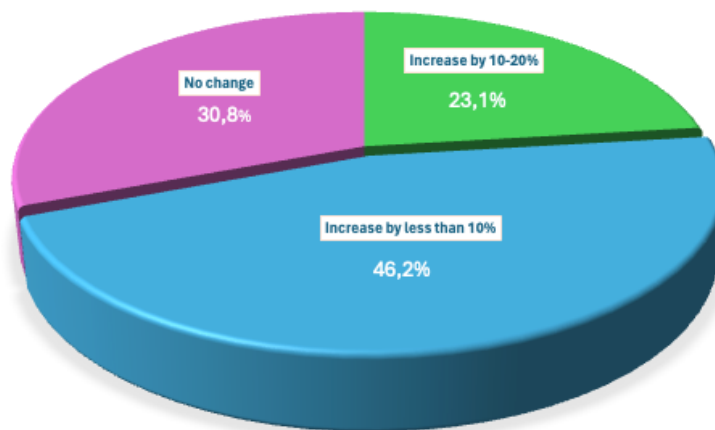


Figure 8. Changes in operational efficiency post AI implementation (n=26)

Source: Composed by the author

In the following question, respondents were asked to rate on a scale of 1 to 5 to see if AI implementation has enhanced their market share. 1 represents a significant increase in revenue, while 5 represents a significant decrease in revenue. As seen in Figure 9, the majority, 92.3%, of participants reported no change in their organisation's revenue, indicating that AI implementation has had a neutral impact. However, a small proportion, consisting of 7.7%, reported they had seen a slight increase in revenue. Notably, no responses indicated that AI implementation would have had a negative impact on the organisation's revenue.



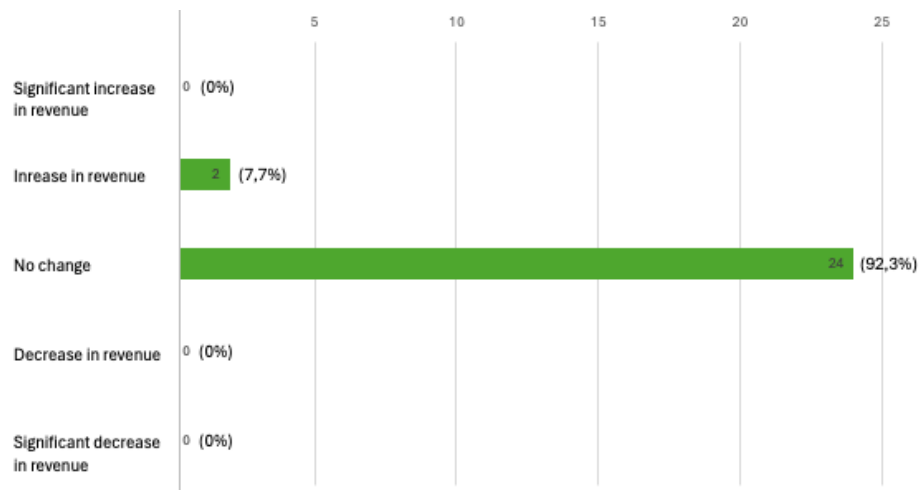


Figure 9. AI implementation impact on revenue (n=26)

Source: Composed by the author

The following question asked the respondents to estimate whether the company had seen any cost reductions after AI implementation.

Figure 10 indicates that a significant portion 61.5% reported no change in costs whereas 30.8% experienced moderately reduced costs. A smaller portion of 7.7% had experienced a moderate increase in costs which can be expected and are usually linked to costs from initial investments for AI technology including expenses related to acquiring AI software or hardware or integrating it into existing systems.

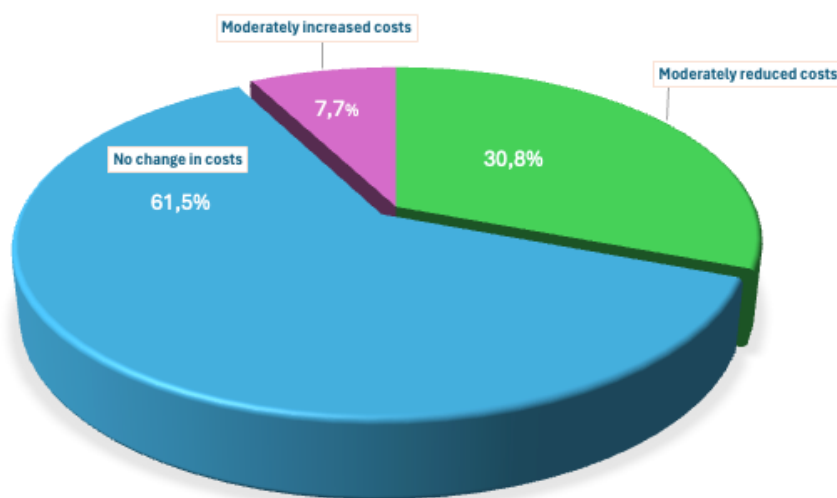


Figure 10. Cost reductions post AI implementation (n=26)

Source: Composed by the author

In the last question related to operational and financial performance the respondents were asked to evaluate from 1 to 5 how the implementation of AI has impacted the organisations supply chain and operations management. 1 represents significantly improved while 5 represents significantly reduced.

As seen in Figure 11, the bar graph shows that 73.1% of respondents feel that AI implementation has had no impact on their supply chain and operations management. Still, a notable 23.1% responded that they had indeed seen a positive impact with slight improvements to their supply chain and operations management. No respondents reported a significant improvement or reduction. From this data, we can make out that while most organisations have not observed a change, some have seen a slight improvement in their supply chain and operational management, with one organisation experiencing a slight downturn, possibly linked to the challenges of integrating AI into complex supply chain systems.

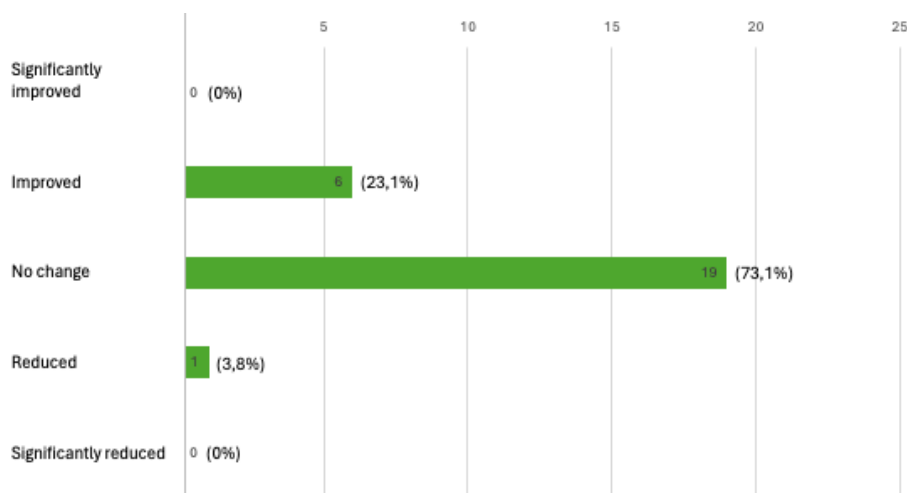


Figure 11. AI implementation impact on supply chain and operational management (n=26)

Source: Composed by the author

### Group 3. Customer relations and market dynamics

Group three consist of three questions addressing how customer relations and market dynamics have changed post-AI implementation.

In the first question, the participants were asked to what extent customer engagement and satisfaction have changed in the organisation after AI implementation. The pie chart in Figure 12 shows that the majority, 73.1% of the respondents, report that implementing AI has neither improved nor worsened customer relations. However, a noteworthy 26.9% of respondents acknowledge a moderate improvement in customer interaction and support services, attributing this enhancement to AI's role in enriching customer experience, potentially through personalised interactions or more efficient service delivery. Looking at the chart, the absence of negative responses suggests that, for the participants, AI has, at the very least, not worsened the customer experience and, as can be seen in some instances, contributed to its improvement.

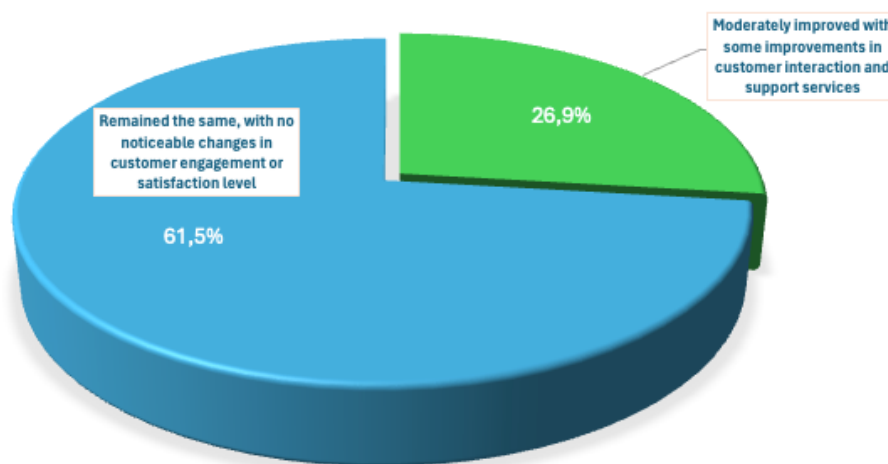


Figure 12. Change in customer engagement and satisfaction post AI implementation (n=26)

Source: Composed by the author

The second question in this group focuses on how AI has impacted the organisation's customer acquisition and retention post-implementation.

The pie chart seen in Figure 13 indicates that the majority, 61.5% of respondents, report a neutral impact on customer acquisition and retention, indicating that AI implementation has not impacted customer base metrics. A proportion of 34.6% observed an increase of less than 10% in customer acquisition and retention rates while 3.8% observed an increase of 10 – 20%. No decrease in customer base metrics was recorded, indicating that AI implementation has, at the very least, positively impacted these metrics.

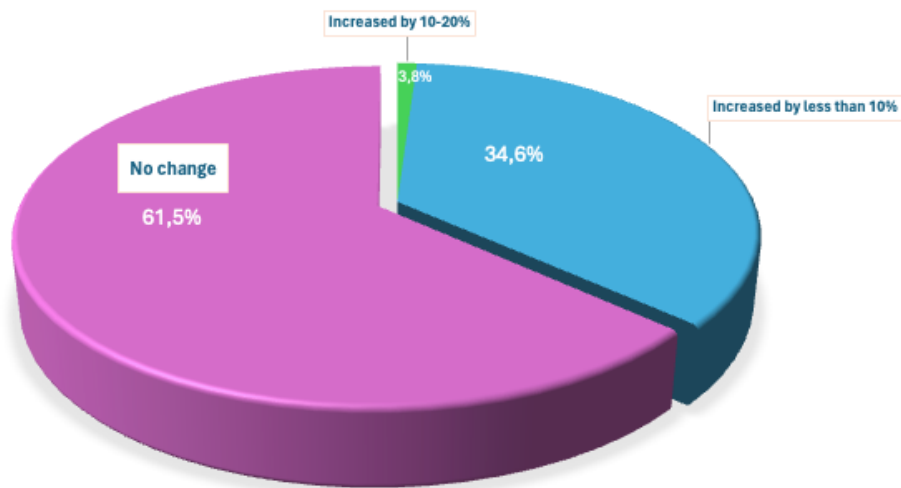


Figure 13. Customer acquisition and retention changes post AI implementation (n=26)

Source: Composed by the author

In the final question of this group, the participants were asked to rate from 1 to 5 how AI has contributed to customer personalisation and experience in their organisation. 1 represents significantly improved, while 5 represents significantly worsened.

The bar chart in Figure 14 gives us a visual of how AI has influenced customer personalisation and experience among the respondents' organisations. We can see that the majority of participants, 69.2%, reported that they had not seen any increase or decrease in their customer personalisation and experience, whereas 23.1% acknowledged a moderate improvement.

7.7% of the respondents indicated a slight downturn after AI implementation, which could suggest initial integration challenges.

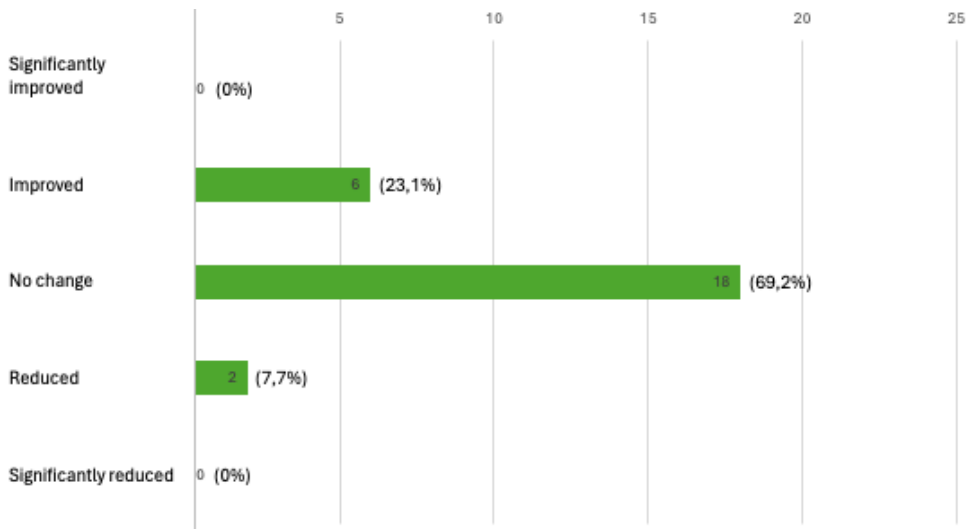


Figure 14. AI’s contribution to customer personalisation and experience (n=26)

Source: Composed by the author.

#### Group 4. Innovation and workforce dynamics

Group 4 consists of three questions focusing on how AI implementation has impacted innovation, employee productivity and organisational workforce dynamics.

In the first question of group four, the participants were asked to rate how they perceive AI implementation has affected their organisation's innovation and product development on a scale of 1 to 5. Here, 1 represents significantly enhanced, while 5 represents significantly hindered.

The bar chart in Figure 15 shows that of the 26 SMEs that conducted the survey, 7.7% reported a significant enhancement in their innovation and product development efforts, while the largest group, consisting of 46.2%, observed some improvement. A very notable 38.5% of the respondents perceived no impact, and an equal minority of 7.7% perceived a slight hindrance in their innovation and product development efforts due to AI.

The absence of any response indicating a significant hindrance suggests a general trend towards AI being beneficial or neutral in terms of fostering innovation and advancing product development in the participant's organisations.

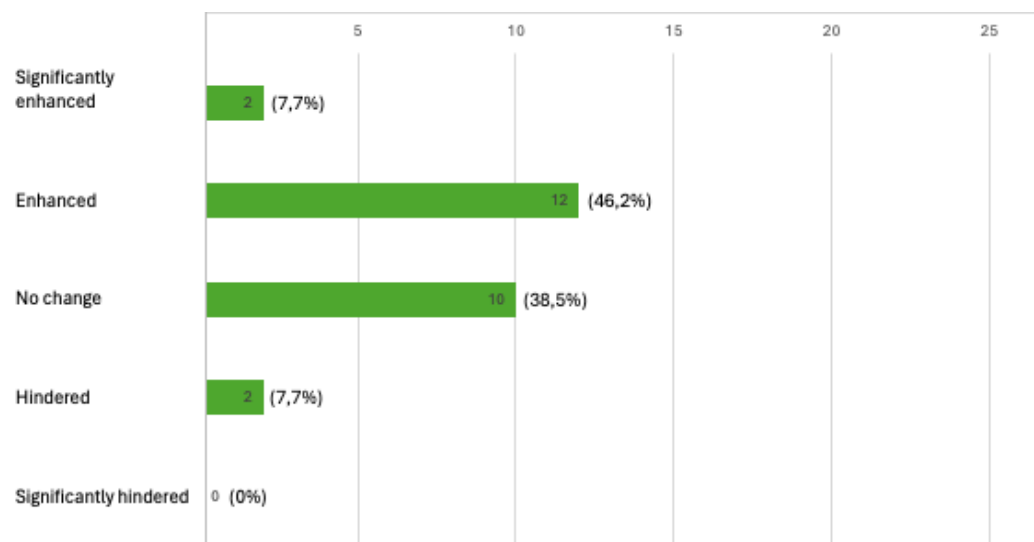


Figure 15. Affects to organisations innovation and product development post AI implementation (n=26)

Source: Composed by the author

In the second question, the participants were asked to evaluate the impact of AI implementation on their employee productivity.

As can be seen in Figure 16, represented by a pie chart, a significant portion of the respondents, 69.2%, find that there has been a moderate increase in employee productivity post-AI implementation. This may give us a glimpse of how AI can be used efficiently to automate routine tasks, thereby freeing up employee time for more intellectually stimulating and creative work, which could lead to increased job satisfaction and output. On the other hand, 30.8% of the respondents reported that they had not seen any change in their employee productivity, which might be due to a lack of suitable integration strategies, insufficient training for employees to adapt to new AI-driven workflows, or the AI applications used not directly affecting the roles and job tasks of certain employees. These insights, however, suggest that AI has the potential to enhance employee productivity.

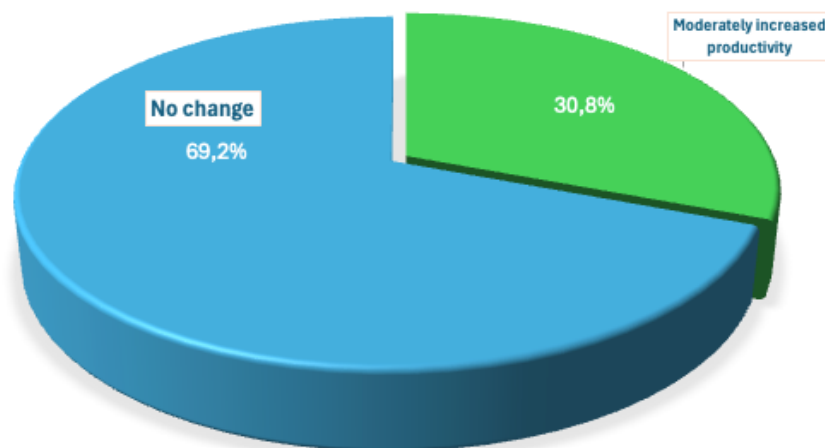


Figure 16. AI's impact on employee productivity (n=26)

Source: Composed by the author

In the last question of this group, the participants were asked to rate from 1 to 5 how AI has affected their workforce dynamics within the organisation. 1 represents significantly improved dynamics, and 5 represents significantly worsened dynamics.

The bar chart in Figure 17 shows that the majority of respondents, 84.6%, feel that AI has had a neutral effect on workforce dynamics. A smaller group, 11.5%, reported a moderate improvement, while a smaller fraction, 3.8%, perceived a slight deterioration. No respondents reported significant improvements or worsening. The neutral majority may suggest that AI has been integrated in a way that complements existing workforce roles without disrupting them. At the same time, the slight improvements could be attributed to AI enabling more collaborative and efficient work environments. The slight negative impact that 3.8% reported might point to challenges in adapting to new AI-driven processes or concerns regarding organisational security.

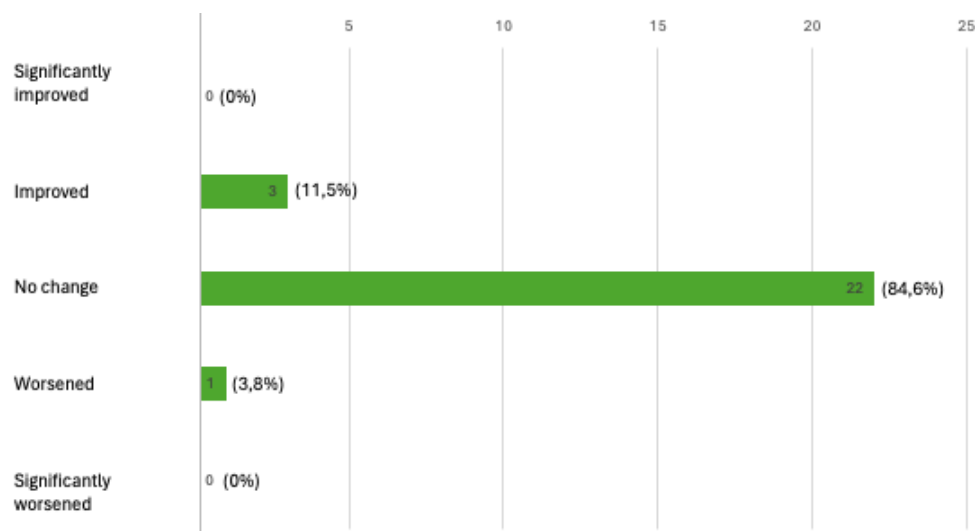


Figure 17. AI's impact on workforce dynamics (n=26)

Source: Composed by the author



## Group 5. Challenges and broader impact

Group 5 consisted of four questions presented to the participants to get a better idea of the main challenges with AI implementation and its broader impact on the organisation.

In the first question of group five the participants were asked to share the main challenges they had faced during AI implementation. The participants were allowed to select many options or add a challenge that was not listed in the question. As seen in the chart illustrated by Figure 18, 53.8% of the respondents reported that lack of skilled personnel was the main challenge. This indicates that finding employees with the right expertise in AI is a major barrier to its efficient implementation. Of the 26 participants, 26.9% reported technical difficulties as a challenge, which can be argued to go hand in hand with a lack of skilled personnel. High costs were a challenge for a smaller portion of respondents, 11.5%, and regulatory challenges for 15.4%, which may suggest that while financial investment and regulatory compliance are concerns, they might not be as prohibitive as the skills gap.

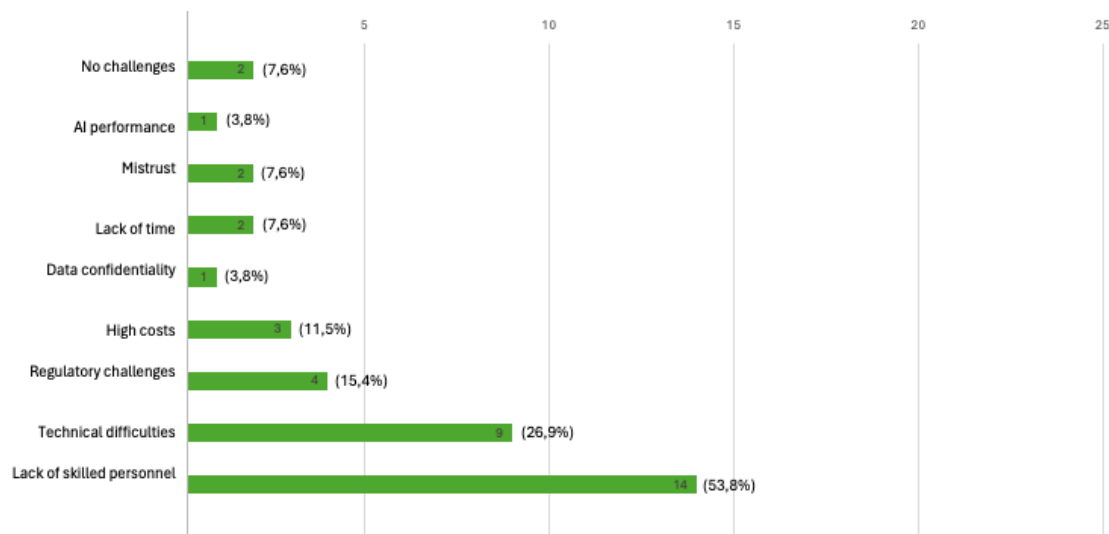


Figure 18. Main challenges with AI implementation (n=26)

Source: Composed by the author

The second question of this group focuses on satisfaction of AI implementation. The participants were asked to rate from a scale of 1 to 5 how satisfied they are with the current pace of AI adoption. 1 represents very satisfied while 5 represents very dissatisfied.

The bar chart seen in Figure 19 shows us that half of the respondents, 50%, express a slight dissatisfaction with the organisation's AI adoption pace, while 3.8% report being very dissatisfied, indicating significant discontent with the pace of AI adoption. 30.8% remained neutral, 11.5% expressed slight satisfaction with the pace, and 3.8% reported they were very satisfied, indicating that while there are varying levels of contentment with the pace of AI adoption, a significant portion of the respondents lean towards dissatisfaction.

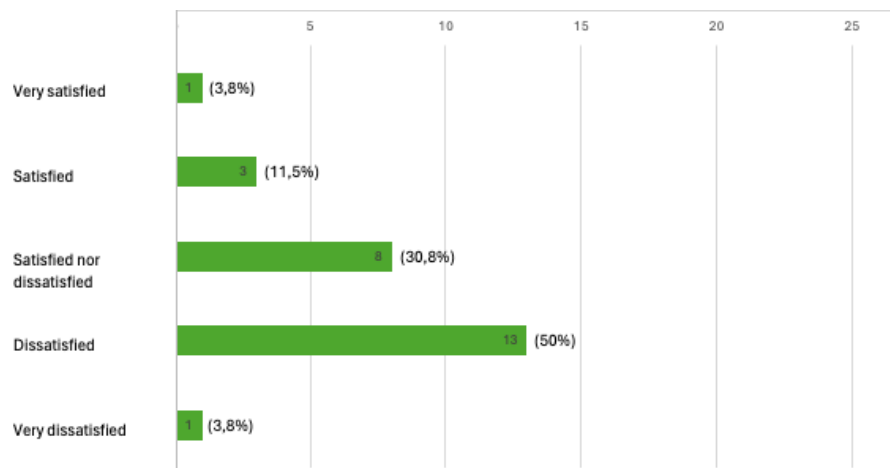


Figure 19. Satisfaction with the organisations current pace of AI adoption (n=26)

Source: Composed by the author

The third question focuses on whether AI implementation has had any impact on the organisation's environmental footprint.

The bar chart seen in Figure 20 suggests that for the vast majority of organisations, 80.8%, AI has not influenced their environmental footprint, implying that AI has been implemented without significant ecological disruption or improvement. Meanwhile, a small proportion, 11.5%, have observed minor enhancements, potentially through AI's ability to optimise energy usage or resource allocation. The 7.7% that noted a slight decline may have encountered issues such as increased energy demands from AI systems. The data seems to suggest that while AI has the potential for environmental impact, its actual effect is mostly seen as neutral, with slight variations to the positive and negative observed by a few of the participants.

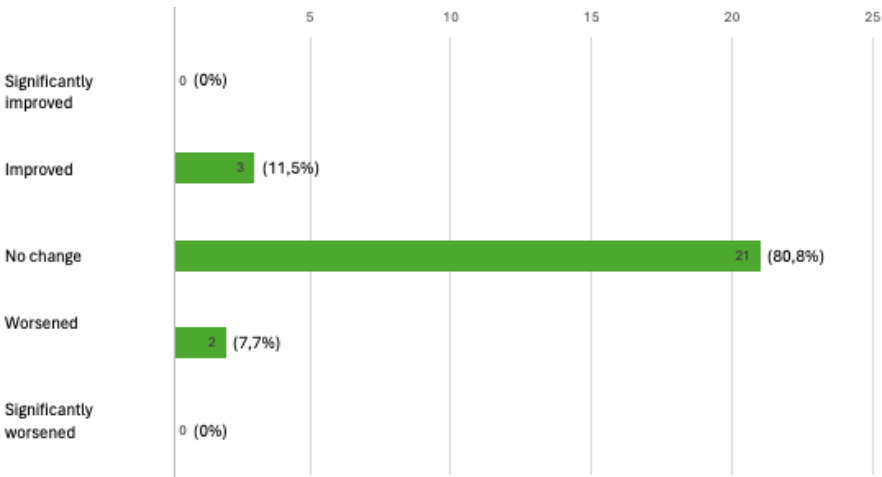


Figure 20. AI implementations impact on organisations environmental footprint (n=26)

Source: Composed by the author

The final question asks the respondents to rate from a scale of 1 to 5 how AI implementation has affected their organisations data driven decision making. 1 represents significantly improved while 5 represents significantly worsened.

Figure 21, represented by a bar chart, shows us that the majority of the participants, 57.7%, responded neutrally to the question, suggesting that AI has neither hindered nor improved their data-driven decision-making processes. A sizable minority of 34.6% perceive a positive shift, which could indicate that AI has helped organisations ' data-driven decision-making through its capability to analyse data and give detailed insight into the data. Only 3.8% report a marginal decline, and another 3.8% report a significant improvement in data-driven decision-making post-AI implementation.

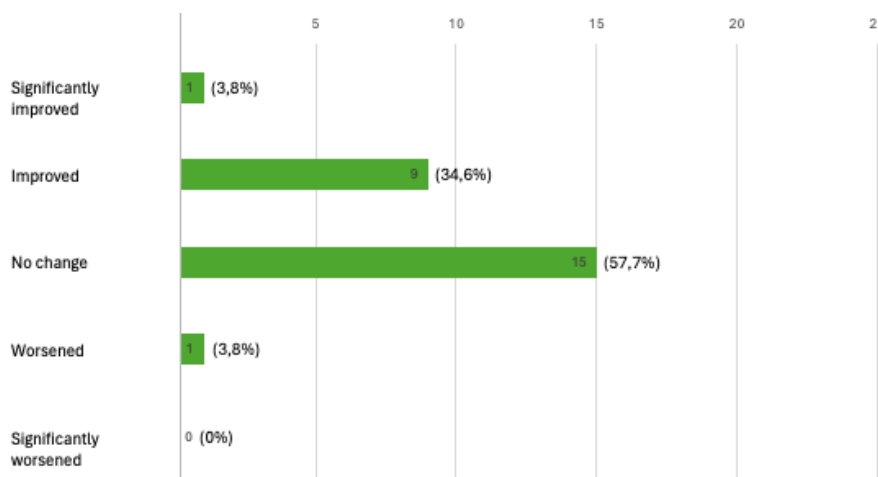


Figure 21. AI's effect on data driven decision making.

Source: Composed by the author

Table 1. Impact of AI implementation

No.	Question	MEAN	STDV
1	To what extent has AI Implementation impacted your business strategy	2.38	0.70
2	Has AI implementation enhance your competitive advantage	2.61	0.57
3	How satisfied are you with your organisations current pace of AI adoption	3.38	0.90
4	What impact has AI implementation had on your organisation's revenue	2.92	0.27
5	How has your organisations market share changed since implementing AI	2.92	0.27
6	How has AI implementation affected your organisations innovation and product development	2.46	0.76
7	How has AI implementation impacted your supply chain and operations management	2.81	0.49
8	How has AI implementation affected workforce dynamics in your organisation	2.92	0.39
9	How has the implementation of AI technologies affected data-driven decision making in your organisation	2.61	0.64
10	How has AI contributed to customer personalisation and experience in your organisation from	2.85	0.54
11	How has AI implementation impacted your organisations environmental footprint	2.96	0.45

Source: Composed by the author

Note(s):

1. A Likert scale was used: 1 = significantly positive outcome, 3 = neutral, 5 = significantly negative outcome

Looking at table 1 we can conclude that AI implementation has had a positive impact predominantly on business strategy, product innovation / development and on the company's competitive advantage all showing a mean score of below 2.7. It is however worth noting that there is quite a lot of variances within these answers which might be due to the small sample size but could also indicate that the extent of these impacts can differ significantly among organisations depending on their industries and budget highlighting the need for tailored AI strategies. On the other hand, satisfaction with the current pace of once organisations AI

adoption shows a mean score of 3.38 which indicates that the majority are somewhat neutral or dissatisfied with their current AI adoption pace. The standard deviation for this is also very high at 0.90, this again might not be a reliable answer due to the sample size.

## **3.2. Discussion**

This study explored how Finnish SMEs have implemented artificial intelligence into their operations in hopes of gaining an increased competitive advantage. It also provided ideas on how SMEs should implement it and what challenges may occur during the implementation process.

### **3.2.1 Theoretical implication**

The results of this study contribute to the existing literature on artificial intelligence (AI) in small and medium-sized enterprises (SMEs) by explaining the nuanced role of AI technologies in competitive strategy development. By highlighting both the reported advantages and complexities SMEs encounter in a technologically evolving landscape, the research contributes to existing theoretical discussions around the strategic use of AI. According to the questionnaire, a majority of the respondents have adopted the integration of AI technologies in SMEs, mainly to improve operational efficiency, customer engagement, and innovation. Over half of the respondents reported an enhancement in innovation and product development post-AI implementation, supporting Otinashvili (2022) emphasis on AI's role in fostering innovation and understanding customer needs.

The integration of AI technologies within organisational operations is expected to improve efficiency and strategic value. However, the pace of AI adoption is a significant factor influencing the overall satisfaction of the technology and can dramatically shape perceptions of its impact on

business processes. As Figure 20 shows, 50% of the respondents felt minor dissatisfaction with their organisations' current pace of AI adoption. This can be linked to what we can see in Figure 19, indicating that organisations' biggest challenges are a lack of skilled personnel and technical difficulties. These challenges may point to a skill gap in the labour market or to the fact that SMEs do not have the resources to hire professionals to handle their new technology implementations. Furthermore, the concern about high costs, noted by 11.5% of respondents, adds another dimension to the barriers SMEs face. While not as pronounced as the skill gap, financial constraints still play a role in the adoption process. These insights on the barriers to AI adoption among Finnish SMEs are essential when considering the overall discussion of AI in business. The dissatisfaction with the pace of AI adoption could be linked to these identified challenges. These findings support the existing challenges organisations face during the implementation reported by Schönberger (2023).

While AI has the potential to level the playing field in business, as pointed out by Soni (2023), the results of the questionnaire suggest that AI's current impact on competitive dynamics remains limited within the context of Finnish SMEs. This naturally raises questions about whether the transformative potential of AI highlighted by Soni (2023) to alter market structures greatly is overestimated or if Finnish SMEs have not fully realised AI's full capabilities.

According to Gupta et al (2023) AI has the potential in enhancing and fostering sustainable practises, however the results from the questionnaire indicate only minimal practical implementations to date, suggesting a gap between theoretical benefits and significant environmental improvements. The modest impact on the environmental footprint reported may be due to a lack of targeted strategies to leverage AI in enhancing sustainability within SMEs.

Furthermore, the positive effects of AI on employee productivity are evident, with a significant number of respondents reporting increased productivity post-AI implementation, aligning well with Qian (2023) observations on AI's role in automating repetitive tasks, allowing employees to engage in more creative and strategic work. Despite this, the overall impact on broader workforce dynamics remained neutral, indicating that while AI facilitates some improvements, the technology does not fundamentally alter existing organisational structures. This stability may indicate that AI can be implemented into SMEs without significant disruptions or negative repercussions on employee roles and relationships.

### **3.2.2 Practical implications**

From a practical perspective, the thesis emphasises the cruciality of integrating AI into a broader strategic framework. This involves not only adopting AI tools but also training staff, adjusting business processes, and matching AI initiatives with long-term business objectives to maximise benefits such as improved operational efficiency, innovation, and customer engagement.

Policymakers and business leaders should develop supportive policies that facilitate AI adoption in SMEs.

These policies could include, but are not limited to, funding opportunities, which means increasing the availability of financial resources through which organisations can support the integration process of AI technologies into their business operations, educational programmes to bridge the existing skill gap, and clear guidelines to guarantee ethical use of AI, which would enhance responsible AI implementation.

For managers, a practical takeaway could involve engaging in continuous learning about AI trends and their possible implications for businesses and understanding their impact on industry standards and consumer expectations to stay competitive. AI should not be perceived just as a tool to enhance efficiency but as something that can provide valuable insights into new possible business models and avenues for growth.

In essence, SMEs should rely on a dynamic and forward-thinking approach where people, technology, and policies come together to create an innovative, ethical, and sustainable ecosystem that successfully integrates AI into their activities and operations.

Those managers who adopt this all-encompassing perspective on AI integration will be in a superior position to guide their companies into a future where technology will augment human creativity and competence, providing them with a competitive edge in a constantly changing marketplace.



## CONCLUSION

This study aims to discover how small-medium enterprises (SMEs) implement and use generative artificial intelligence (AI) to gain a competitive advantage. The research questions for this study are: What impact does AI adoption have on SMEs' acquisition of a competitive advantage, and what are the benefits of AI that impact SMEs competitive strategies the most?

Looking at the first research question: What impact does AI adoption have on SMEs' acquisition of a competitive advantage? The research shows that while AI implementation is standard among SMEs, its effects vary significantly depending on the area of business operations. We can conclude from the study that most SMEs have implemented AI to enhance operational efficiency, enhance customer engagement and drive innovation. However, it seems that the strategic integration of AI that supports long-term competitive advantages remains a challenging task. This complexity is often due to several obstacles. The challenges the organisations face during implementation include the high cost of implementation, the lack of skilled AI personnel, and technical and regulatory challenges. These complexities prevent SMEs from fully leveraging AI to their strategic potential, thus also limiting the competitive advantage that can be gained from these technologies.

Delving into the second research question: What are the benefits of AI that most impact SMEs' competitive strategies? The study shows that AI, in addition to enhanced operational efficiency, customer engagement, and innovation, AI's ability to automate processes and data-driven insights can help SMEs with improved efficiency and cost reductions. These benefits assist SMEs in maintaining a competitive edge in rapidly changing markets.

The empirical analysis within this study suggests that AI's impact on SME competitiveness remains nuanced since AI has not radically changed the market share or dramatically increased

revenue for the majority of the SMEs that participated in the study. Rather, its value primarily lies in enhancing operational efficiency and innovation and improving customer engagement via enhanced service delivery and personalised experiences. Even though these improvements are subtle, they play a crucial part for SMEs striving to maintain relevance and competitiveness in a technologically driven world.

The author suggests that further research should focus on developing longitudinal studies to track the long-term impact of AI on competitiveness. Additionally, further in-depth studies on the role of AI in promoting business sustainability and the technology's impact on the social dimensions of business operations could provide valuable insights. The author believes that it is critical for SMEs to stay up to date with the latest developments in AI technology and critically assess and adapt these technological tools to fit their unique strategic environments.

To sum up, AI presents a double-edged sword for SMEs, offering tremendous opportunities for those who manage to navigate its complexities. To fully exploit AI's potential, policymakers and business executives should comprehend the dynamics of AI implementation and assist SMEs through knowledge sharing, funding for AI initiatives, and regulatory frameworks to harness AI's potential effectively.

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# APPENDICES

## Appendix 1. Questionnaire

### Invitation to Participate in a Thesis Survey on AI and Competitive Strategy for SMEs

**B** *I* U  

**Dear SME Leaders,**

My name is Alex Björkbom, I am a third year Bachelor of International business administration student at Tallinn University of Technology.

I am conducting a study as part of my thesis titled "AI and Competitive Strategy for SMEs," which explores how small and medium-sized enterprises (SMEs) are integrating artificial intelligence (AI) into their competitive strategies. The goal is to understand the impact of AI on SMEs, especially focusing on the strategic benefits, challenges, and outcomes of AI adoption.

**Purpose of the Questionnaire:** This questionnaire aims to gather valuable insights from Finnish SME leaders like you, who are at the forefront of implementing and integrating AI into business processes. Your participation will contribute significantly to a deeper understanding of AI's role in shaping the competitive landscape for SMEs.

**About the Questionnaire:**

- The survey consists of 22 questions, estimated to take approximately 5 minutes to complete.
- Questions cover various aspects of AI implementation.

**Importance of Your Contribution:** Your insights are invaluable to this research. By participating, you help in advancing our collective understanding of AI as a strategic tool in business, and contribute to a body of knowledge that could benefit SMEs across Finland and beyond.

**Instructions for Participation:**

- Please respond to each question based on your experiences and current business practices.
- If you are unsure about a question, an educated estimate or your perception is welcome.

**Questions or Concerns:** Should you have any questions or require further information, please do not hesitate to contact me:

Email: alex.bjorkbom@gmail.com

**Thank You:** Your time and insights are greatly appreciated and will make a significant contribution to this research. Thank you for considering this request for participation.

**Organisation name (optional)**

Short-answer text

**Your position within the organisation \***

- ☐ CEO
- ☐ COO
- ☐ CFO
- ☐ CTO
- ☐ Other...

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**Industry sector \***

Short-answer text

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**By selecting 'I Agree,' you, as a participant, grant me, the author of the thesis, the permission \* to reference the answers provided by your company in my research. This may include quoting or discussing the responses in the context of the study's findings. However, if you select '*I want my responses to be kept confidential*' please be assured that your company's individual responses will remain confidential. They will not be individually referenced, discussed, or identified in any way in the research, maintaining the privacy of your specific contributions.**

- ☐ I agree
- ☐ I want my responses to be kept confidential

---

**Our organisation has effectively implemented AI technologies in various aspects of our operations. \***

- ☐ Strongly agree
  - ☐ Agree
  - ☐ Neither agree nor disagree
  - ☐ Disagree
  - ☐ Strongly disagree
-

**What were the primary objectives for AI implementation in your organisation (Select all that apply)?** \*

- ☐ Improved operational efficiency
- ☐ Enhance customer engagement and satisfaction
- ☐ Drive innovation
- ☐ Other...

**To what extent has AI Implementation impacted your business strategy from 1-5? \***

	1	2	3	4	5	
Significantly positively	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Significantly negatively

**How has operational efficiency changed post AI implementation? \***

- ☐ Increased by more than 20%
- ☐ Increased by 10 -20%
- ☐ Increased by less than 10%
- ☐ No change
- ☐ Decreased



**How has the customer acquisition and retention changed post AI implementation?** \*

- ☐ Increased by more than 20%
- ☐ Increased by 10 -20%
- ☐ Increased by less than 10%
- ☐ No change
- ☐ Decreased

---

**To what extent has customer engagement and satisfaction changed in your organisation post AI implementation?** \*

- ☐ Significantly improved with notable enhancements in customer service responsiveness and support avail...
- ☐ Moderately improved with some improvements in customer interactions and support services.
- ☐ Remained the same, with no noticeable changes in customer engagement or satisfaction levels
- ☐ Moderately worsened, with some negative impacts on customer interactions or support services.
- ☐ Significantly worsened, with considerable negative impacts on customer service responsiveness and sup...

---

**Has AI implementation enhance your competitive advantage? From 1 - 5** \*

- |                  | 1                     | 2                     | 3                     | 4                     | 5                     |                 |
|------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------|
| Greatly enhanced | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Greatly reduced |

**What challenges did your organisation face during AI implementation (Select all that apply)?**

\*

- ☐ Technical difficulties
- ☐ Lack of skilled personnel
- ☐ High costs
- ☐ Regulatory challenges
- ☐ Other...

**How satisfied are you with your organisations current pace of AI adoption from 1-5? \***

	1	2	3	4	5	
Very satisfied	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very dissatisfied

**What impact has AI implementation had on your organisation's revenue from 1-5? \***

\*

	1	2	3	4	5	
Significantly increased revenue	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Significantly decreased revenue

**Has there been any cost reductions in your organisation post-AI implementation? \***

\*

- ☐ Significantly reduced costs
- ☐ Moderately reduced costs
- ☐ No change in costs
- ☐ Moderately increased costs
- ☐ Significantly increased costs

**How has your organisations market share changed since implementing AI from 1-5?** \*

	1	2	3	4	5	
Gained market share	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Lost a substantial amount of market share

**How has AI implementation affected your organisations innovation and product development from 1-5?** \*

	1	2	3	4	5	
Significantly enhanced	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Significantly hindered

**How has AI implementation impacted your supply chain and operations management from 1-5?** \*

	1	2	3	4	5	
Significantly improved	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Significantly reduced

**What impact has AI had on employee productivity in your organisation?** \*

- ☐ Significantly increased productivity
- ☐ Moderately increased productivity
- ☐ No change
- ☐ Moderately decreased productivity
- ☐ Significantly decreased productivity

**How has AI implementation affected workforce dynamics in your organisation from 1-5? \***

	1	2	3	4	5	
Significantly improved dynamics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Significantly worsened dynamics

**How has the implementation of AI technologies affected data-driven decision making in your organisation from 1-5? \***

	1	2	3	4	5	
Significantly improved	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Significantly worsened

**How has AI contributed to customer personalisation and experience in your organisation from 1-5? \***

	1	2	3	4	5	
Significantly improved	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Significantly worsened

**How has AI implementation impacted your organisations environmental footprint from 1-5? \***

	1	2	3	4	5	
Significantly improved	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Significantly worsened

If you wish to comment further on your answers or something else please feel free to do so here.

Long-answer text



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