Hanna Koskiniemi

Improving customer service operations through the implementation of artificial intelligence tools

School of Technology and Innovations
Master's thesis in Information Systems
Master's program in Information Systems Science

Vaasa 2025

UNIVERSITY OF VAASA
School of Technology and Innovations
Author: Hanna Koskiniemi
Title of the thesis: Improving customer service operations through the implementation of artificial intelligence tools
Degree: Master Science in Economics and business administration
Discipline: Master's program in Information Systems Science
Supervisor: Duong Dang
Year: 2025 **Pages:** 85

ABSTRACT:

This master's thesis explores the integration of artificial intelligence (AI) tools into customer service processes to improve efficiency, customer satisfaction, and operational effectiveness in companies. As AI continues to revolutionize industries, its applications in customer service has gained huge attention, because those are able to automate repetitive tasks, enhance customer interactions, and provide valuable insights. Many experts are hopeful about the continued development of AI. Despite these advantages, AI implementation faces challenges, including system integration, employee resistance and ethical concerns related to data privacy and fairness. In any case, trends show that the use of AI has increased and will continue to increase in the future, bringing significant economic benefits to companies. The aim of this research is to examine how AI tools can be used the most effectively in customer service and how companies can successfully manage their implementation projects. Qualitative research is used as a research method in this thesis. The research is done with interviews and a literature review.

Companies use various AI tools in their processes, such as chatbots, virtual assistants, and predictive analytics. In order for these tools to achieve the best possible results in a company, a company needs to know what kind of tools serve their needs best and how to successfully implement them. The findings of this thesis show that AI improves response times and efficiency, but it needs careful planning, employee training, and alignment with business goals.

The findings of this thesis show that while AI tools offer significant potential in automating routine tasks, improving response times, and personalizing customer interactions, their successful implementation requires careful consideration of factors such as organizational readiness, data quality, and employee training. Human factors, such as employee resistance, must be taken into account in the implementation processes of AI tools. This can be prevented by openness and transparency of projects.

The thesis ends with practical recommendations for businesses looking to use AI in customer service. It highlights the importance of taking a strategic approach to integrating AI, which includes setting clear goals, choosing the right tools, and managing the implementation process effectively. A strategic and well-executed approach enables companies to maximize the benefits of AI while minimizing challenges, ultimately enhancing customer satisfaction and driving business success.

KEYWORDS: AI Implementation, AI tools, Artificial Intelligence, Automation, Customer Service

VAASAN YLIOPISTO
Tekniikan ja Innovaatiojohtamisen yksikkö
Tekijä: Hanna Koskiniemi
Tutkielman nimi: Asiakaspalvelun parantaminen tekoälytyökalujen avulla
Tutkinto: Kauppatieteiden maisteri
Oppiaine: Tietojärjestelmätieteen maisteriohjelma
Työn ohjaaja: Duong Dang
Valmistumisvuosi: 2025 **Sivumäärä:** 85

TIIVISTELMÄ:

Tässä pro gradussa käsitellään tekoälyn (AI) käyttöönottoa yritysten asiakaspalveluprosesseissa tehokkuuden, asiakastyytyväisyyden ja yrityksen toimintojen parantamiseksi. Tekoälyn käyttö asiakaspalvelussa on saanut paljon huomiota, sillä sen avulla voidaan automatisoida toistuvia tehtäviä, parantaa vuorovaikutusta asiakkaiden kanssa ja tuottaa arvokasta tietoa. Vaikka tekoälyn käytöllä on paljon etuja, sen käyttöönottoon liittyy myös haasteita, kuten järjestelmien yhteensopivuus, työntekijöiden vastustus sekä tietosuojaan ja oikeudenmukaisuuteen liittyvät kysymykset. Tekoälyn käyttö on joka tapauksessa yleistynyt ja sen odotetaan kasvavan entisestään, tuoden yrityksille merkittäviä taloudellisia hyötyjä. Tämän tutkielman tavoitteena on selvittää, miten tekoälytyökaluja voidaan hyödyntää asiakaspalvelussa mahdollisimman tehokkaasti ja miten niiden käyttöönottoprojektit voidaan johtaa onnistuneesti. Tutkimus toteutettiin laadullisilla menetelmillä, ja aineisto koostuu haastatteluista sekä kirjallisuuskatsauksesta.

Yritykset hyödyntävät erilaisia tekoälyratkaisuja, kuten chatbotteja, virtuaaliavustajia ja ennakoivaa analytiikkaa. Jotta yritys saa tekoälytyökaluista kaiken hyödyn irti, yrityksen on tunnistettava mitkä työkalut sopivat sen tarpeisiin ja miten ne kannattaa ottaa käyttöön. Tutkimuksen tulokset osoittavat, että tekoäly voi parantaa asiakaspalvelun nopeutta ja tehokkuutta, mutta sen onnistunut käyttöönotto vaatii huolellista suunnittelua, henkilöstön koulutusta ja yrityksen tavoitteiden huomioimista.

Vaikka tekoäly voi tehostaa toistuvia tehtäviä, nopeuttaa vastausaikoja ja parantaa asiakaskokemusta, sen käyttöönotto edellyttää esimerkiksi yrityksen valmiuden, datan laadun ja työntekijöiden asenteiden huomioimista. Erityisesti työntekijöiden suhtautuminen vaikuttaa merkittävästi siihen, miten onnistuneesti tekoäly saadaan osaksi toimintaa. Avoimuus ja läpinäkyvyys voivat auttaa tämän haasteen hallinnassa.

Tutkimuksen lopussa on käytännön suosituksia yrityksille, miten tekoälyä voidaan hyödyntää yrityksen asiakaspalvelussa. Tekoälyn käyttöönotossa on tärkeää asettaa selkeät tavoitteet, valita oikeat työkalut yrityksen tarpeisiin ja johtaa niiden käyttöönotto huolellisesti. Hyvin suunniteltu ja toteutettu prosessi auttaa maksimoimaan tekoälyn hyödyt, vähentämään haasteita ja parantamaan asiakastyytyväisyyttä sekä yrityksen menestystä.

KEYWORDS: Asiakaspalvelu, Automatisointi, Tekoäly, Tekoälyn käyttöönotto, Tekoälytyökalut

Contents

1 Introduction 7

1.1 Background 8

1.2 Research problem 10

1.3 Research questions and structure of the thesis 12

2 Literature review 14

2.1 Artifial intelligence in business 14

2.2 Customer service processes and their challenges 22

2.3 AI tools for customer service 24

2.4 Key factors in successful AI implementation 34

2.4.1 Technical factors 35

2.4.2 Organizational factors 37

2.4.3 Human factors and ethical considerations 41

2.4.4 Leadership in AI implementation projects 45

3 Research Methodology 48

3.1 Research design 48

3.2 Data collection 49

3.3 Data analysis 52

3.4 Ethical considerations 54

4 Findings 55

4.1 Interview results 55

4.1.1 Theme 1. AI’s role in customer service 56

4.1.2 Theme 2. Challenges in AI implementation 58

4.1.3 Theme 3. Best practises for AI adoption 60

4.2 Public attitudes towards AI 64

5 Discussion 67

5.1 Theoretical and practical implications 67

5.2 Answering the research questions 70

5.3 Limitations and future research 72

6 Conclusion 74

References 75

Appendices 83

Appendix 1. Interview Questions 83

Appendix 2. Acknowledgement of generative AI use 85

Pictures

Picture 1 Security Policy and National Defence Survey 2021 65

Picture 2 EVA Value and Attitude Survey Spring 2022 66

Figures

Figure 1. Thesis structure 13

Figure 2 Visual representation of research process 52

Tables

Table 1. Comparison of AI tools for customer service 31

Table 2. Types of business objectives 37

Table 3. Steps in implementing AI tools 38

Table 4 The key themes from the interviews 55

Table 5 Findings summary table 62

Abbreviations

AI	Artificial Intelligence
B2C	Business- to- Consumer
NLP	Natural Language Processing
ML	Machine Learning
GDPR	General Data Protection Regulation
CCPA	California Consumer Privacy Act
IT	Information Technology
EU	European Union

1 Introduction

Artificial Intelligence (AI) has changed the operations of companies all over the world and this change continues. Artificial intelligence can analyze huge amounts of data, learn from this data, and make decisions based on it. This ability makes AI an important tool in business operations. AI increases efficiency, innovation and customer satisfaction. Along with other business operations, AI is particularly useful in customer service.

Today, there is a lot of competition in the business world and companies need to respond to customer wishes and needs quickly and efficiently. Effective customer service in companies plays a key role in increasing a company's reputation and success, and companies are under the pressure to make it even faster and more easily accessible. AI tools, such as chatbots, virtual assistants, and analysis software, offer the companies the opportunity to respond to customer wishes and needs by automating routine tasks, improving response times, and providing insights that make customer experiences better.

However, despite all these benefits, there may also be challenges when implementing an AI tool in a company. It is difficult for companies to choose right tools for their business needs and these tools can be difficult to integrate into their workflows. Managing AI tools implementation project can also be challenging. The companies must have deep knowledge of how AI tools can be effectively implemented in customer service processes so that their positive impact is maximized.

This thesis explores the use of AI tools in improving company's customer service processes, focusing on how these tools can be applied most effectively and how their implementation projects can be managed successfully. The thesis will review the literature and scientific studies on this topic. The purpose of the thesis is to answer the research questions and, in addition, to produce practical suggestions on how companies can improve their customer service processes with the help of AI tools.

1.1 Background

Artificial intelligence is the simulation of human intelligence in machines that are programmed to think, learn, and make decisions. In business operations, AI has become a powerful tool which is driving innovation and efficiency. It is increasingly used to automate repetitive tasks, analyze extensive datasets, and support decision-making processes, and these ways enhancing productivity and accuracy across industries (Perifanis & Kitsios, 2023, p. 2).

The COVID-19 pandemic has done socio-technical, political-economic, and demographic changes faster, requiring businesses to manage market shifts and customer behaviour effectively. That is one reason why artificial intelligence has become important tool for businesses. AI enables organizations to improve operations and decision-making through automation and advanced analytics, helping them navigate an uncertain business environment (Perifanis & Kitsios, 2023, p. 2).

AI-tools can be utilized in various ways, such as AI-driven decision-making for loans and sales forecasting and automating manual processes. These technologies are particularly effective in situations where humans and AI work together to enhance productivity. Despite its potential, the implementation of AI requires careful planning to ensure strategic alignment and achieve effective outcomes. (Perifanis & Kitsios, 2023, p. 2).

AI and analytics are game changers in addressing the challenges of modern business. However, adopting AI still faces obstacles, such as ensuring alignment between business users and analytics practitioners and establishing governance mechanism to manage AI's implementation responsibly. AI governance, which includes tools and methods to quide AI development and application, is essential to ensure compliance with legal and ethical standards (Perifanis & Kitsios, 2023, p. 2).

Many organizations are still in the experimental phase of AI adoption. They often begin with pilot programs and invest heavily in machine learning and other AI technologies.

These efforts aim to automate processes, improve efficiency, reduce costs, and achieve better market outcomes. However, to fully leverage AI's potential, it must be integrated with other organizational systems and workflows. Despite its transformative capabilities, AI is not a standalone solution for competitive advantage. Businesses must combine AI with dynamic capabilities and adaptive strategies to unlock technological opportunities, drive innovation, and create lasting value (Perifanis & Kitsios, 2023, p. 2).

AI has significantly impacted customer service, transforming the way organizations interact with their clients. One of its primary jobs is automating responses through chatbots (Huang & Rust, 2018, p. 156). These tools, which are powered by natural language processing (NLP), can handle a wide range of customer inquiries, providing instant responses and allowing human workers to focus on more complex tasks (Perifanis & Kitsios, 2023, p. 23). In addition to automation, AI enables personalization by leveraging machine learning algorithms to analyze customer preferences and tailor recommendations accordingly. For example, streaming platforms like Spotify and Netflix use AI to deliver personalized content suggestions. AI can also analyze customer emotions and provide proactive responses, enhancing customer satisfaction (Huang & Rust, 2018, p. 161).

The increasing use of AI tools in customer service is result from customer expectations. Today's consumers demand fast, personalized, and seamless interactions. AI meets these expectations by offering scalable and efficient solutions, helping organizations to stay competitive in a fast-changing business environment (Cao et al., 2024, p. 9). Technological advancements, particularly in NLP and deep learning, have expanded AI's capabilities. For example, AI-driven virtual assistants like Amazon's Alexa (Amazon, n.d.) and Google Assistant (Google, n.d.) not only answer questions but they can also manage complex tasks like scheduling and shopping. This makes AI tools even better and more appealing to businesses (Cao et al., 2024, p. 5).

AI tools address common challenges in customer service, such as long response times, inconsistent service quality, and high operational costs. By automating repetitive tasks,

organizations can allocate resources to more strategic targets. In addition to this, AI is revolutionizing social media marketing by enabling personalized customer interactions and image processing. With AI tools businesses can predict customer behaviour, use tools like Marketing Cloud to understand and shape it, and leverage AI-powered chatbots and virtual influencers to align quickly with customer needs. (Omeish et Al., 2024).

Despite its benefits, the implementation of AI tools in customer service does not come without challenges. One significant challenge is integrating these tools into existing systems. The company's infrastructure may lack the compatibility what is required for seamless AI implementation and that may increase expenses for the tool. Employee resistance is another common obstacle. As AI automates routine tasks, some employees may fear losing their jobs, which is making implementation project more difficult. To address these concerns businesses must invest in effective communication and training programs to help employees collaborate with AI systems. (Huang & Rust, 2018, p. 156).

1.2 Research problem

In today's highly competitive world, effective customer service is essential for businesses which are seeking to retain customers and build loyalty. However, traditional customer service processes often struggle with inefficiencies, high operational costs, and the inability to provide consistent, personalized experiences across large customer bases (Midlands Technical College, 2022). As a result, organizations are increasingly exploring the potential of artificial intelligence (AI) tools to address these challenges. Despite the growing use of AI in business context, there is a lack of comprehensive understanding about what kind of tools should they use and how these tools can be optimally integrated into customer service processes and managed effectively.

The research problem in this thesis is twofold:

1. How can companies use AI tools in customer service operations effectively?
2. What factors impact the implementation and usage of AI tools in customer service operations?

While AI tools such as chatbots, virtual assistants, and predictive analytics have shown significant potential in automating and enhancing customer service, their success depends on multiple factors, including organizational readiness, data quality, and user acceptance (Manyika & Bughin, 2018). Furthermore, as Fountaine et al. (2021, p. 18) define, failed implementation projects are often result from following things:

1. Companies lack a clear understanding of advanced analytics.
2. Companies don't assess feasibility, business value, and time horizons.
3. Companies have no strategy beyond a few use cases.
4. Companies don't clearly define key roles.
5. Companies lack experts who can bring business and analytics together.
6. Companies isolate analytics from the business.
7. Companies squander time and money on enterprise-wide data cleaning instead of aligning data consolidation and cleanup with their most valuable use cases.
8. Companies fully build out analytics platforms before identifying business cases.
9. Companies neglect to quantify analytics' bottom-line impact, lacking a performance management framework with clear metrics for tracking each initiative.
10. Companies fail to focus on ethical, social, and regulatory implications.

The aim of this thesis is to explore the use and implementation of AI tools in customer service processes to improve their efficiency, scalability, and customer satisfaction. The specific parts in this thesis are identifying effective ways to utilize AI tools in customer service processes, exploring key success factors for AI implementation projects and find recommendations to improve the AI implementation projects.

The research is very relevant today. According to a report by McKinsey & Company, AI adoption has grown significantly in customer service functions. According to this report, nearly half of responders in a 2018 McKinsey survey on AI adoption say their companies have embedded at least on AI capability in their business processes, and other 30% are piloting AI. Still, only 21% say their organizations have embedded AI in several parts of

business, and only 3% of large firms have integrated AI across their full enterprise workflows. This research was done of more than 400 use cases across 19 industries. (Manyika & Bughin, 2018). Also, Companies like Amazon, and Bank of America have already started leveraging AI to deliver better customer experiences (Amazon, n.d; Bank of America, n.d.).

However, there are many things to consider when implementing AI tools, and the implementation does not always go smoothly. According to McKinsey & Company survey: AI adoption advances, but foundational barriers remain (2018), when asked about the biggest challenges to AI adoption, responders told that the most common barrier is strategy related. Companies don't often have a clear AI strategy, appropriate talent or functional silos that constrain end-to-end AI solutions. Companies also often do not have leaders who demonstrate ownership of and commitment to AI. These statistics are showing that companies need systematic research about the best practices for AI adoption in customer service.

1.3 Research questions and structure of the thesis

This thesis will explore the integration of artificial intelligence (AI) tools in customer service processes. Thesis has two research questions:

1. How can companies use AI tools in customer service operations effectively?
   This question involves identifying the optimal strategies for implementing AI tools to enhance customer service efficiency and effectiveness. By studying literature and investigating AI tools and their user experiences, the best tools and their implementation strategies in companies are identified.
2. What factors impact the implementation and usage of AI tools in customer service operations?
   This question focuses on the management aspects of integrating AI tools into customer service operations. It involves identifying the best practices for managing AI implementation projects. It also takes into account the challenges associated with implementing an AI tool, such as employee training and system

integration. The question also considers the ethical implications and data governance issues associated with the implementation of artificial intelligence in customer service.

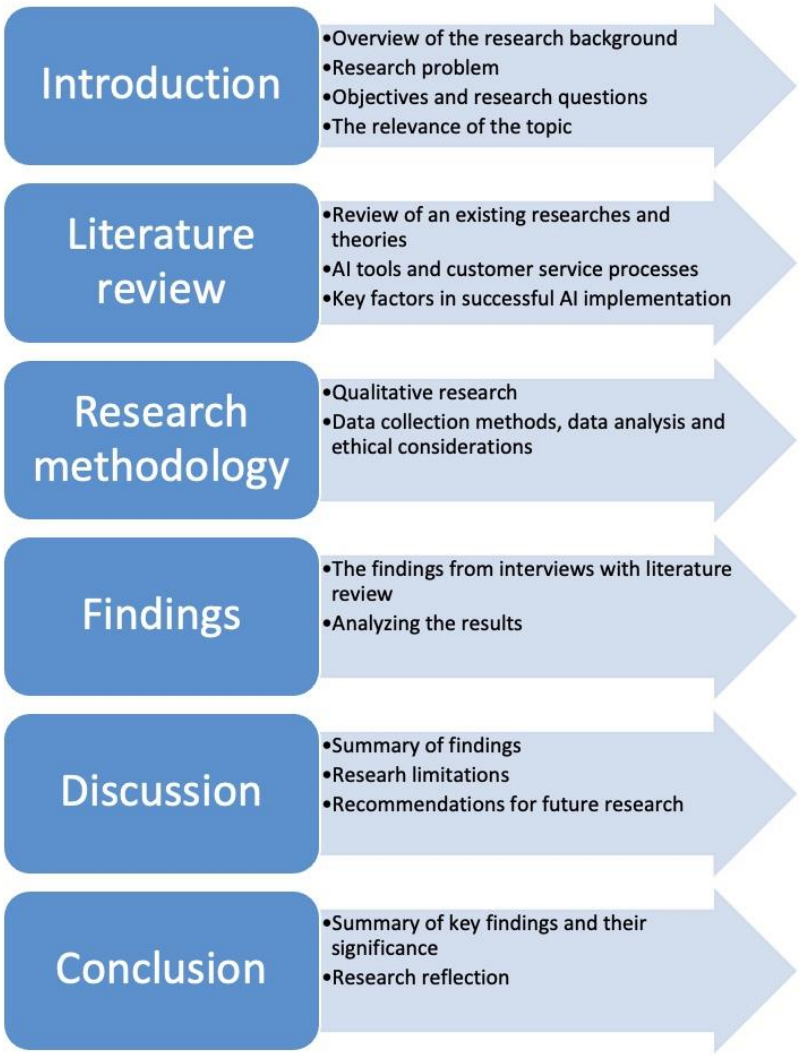


Figure 1. Thesis structure

This thesis is structured into six chapters. Figure 1 clarifies the structure of the thesis. The figure shows the structure of the thesis by main sections. Next to the main sections is a description of what the section contains.

2 Literature review

The literature review in this thesis explores what AI is, where it comes from, and the factors that affect its use. The chapter looks at the history of AI, discusses trends and megatrends related to it, and explains how AI is used in business. It also examines the challenges in customer service and how AI can help solve them. Additionally, the chapter explores different AI tools and the key factors for successfully implementing AI in business.

2.1 Artifial intelligence in business

Artificial intelligence is the ability of the machine to make decisions (Maisel et al., 2022, p. 4). It is an area of computer science that focuses on developing systems which are capable of performing task that typically require human intelligence. These tasks include problem-solving, decision-making, natural language processing, and visual perception. AI aims to copy cognitive processes such as learning and adaptation, enabling machines to analyze data, identify patterns, and make informed predictions or recommendations. For the thinking, computer needs natural language processing to communicate successfully in a human language, knowledge representation to store what it knows or hears, automated reasoning to answer questions and to draw new conclusions and machine learning to adapt to new circumstances and to detect and extrapolate patterns (Russell & Norvig, 2021, p. 19). In order for companies to make good decisions regarding AI tools, it is important to understand what these tools are and where they come from.

The foundation of artificial intelligence (AI) was laid in 1943 by Warren McCulloch and Walter Pitts, who created a model of artificial neurons inspired the workings of the human brain. Their model proposed that neurons could be “on” or “off”, depending on its stimulus, and demonstrated that any computable function could be represented by a network of these neurons. They even theorized that these networks could learn. (Russell & Norvig, 2021, p. 35).

In 1950, Marvin Minsky and Dean Edmonds built the first neural network computer, called SNARC, using 3000 vacuum tubes. Around the same time, researchers like Christopher Strachey and Arthur Samuel were creating some of the first AI programs, including checkers-playing software. In addition to this, Alan Turing shaped the field with his article in 1950: “Computing Machinery and Intelligence”, where he wrote about Turing Test, machine learning, genetic algorithms, and reinforcement learning. Turing also warned about the risks of artificial intelligence to humanity (Russell & Norvig, 2021, p. 35).

In 1956 John McCarthy, Claude Shannon, Marvin Minsky, and Nathaniel Rochester organized a two-month AI workshop at Dartmouth College. This event brought together notable researchers like Allen Newell and Herbert Simon. The workshop didn’t lead to immediate breakthroughs, but it built the groundwork of AI research (Russell & Norvig, 2021, p. 36).

Between 1966 and 1973 early AI systems succeeded in solving simple problems but they struggled with complex ones because of lack of task analysis and the limitations of problem-solving methods, which couldn’t handle the complexity of real-world scenarios. Additionally, experiments in genetic programming produced little progress (Russell & Norvig, 2021, p. 39).

In the 1980s, the back-propagation algorithm what was originally developed in the 1960s, was discovered again. Then happened a significant shift in AI research and applications. Since 1987, AI has become more flexible and since 2001 big data revolutionized AI by enabling the use of massive datasets, such as trillions of images, billions of hours of speech and video, and other large-scale information like genomic or social network data. These datasets have made AI capable of learning from big amounts of unlabelled data, which significantly improves tasks like image analysis. Research shows that increasing data size often leads to greater performance gains than refining algorithms. Big data has also played a big role in groundbreaking AI achievements, such as IBM Watson’s 2011

Jeopardy! victory, boosting AI's commercial appeal and public interest (Russell & Norvig, 2021, p. 41–44).

Deep learning, a form of machine learning which uses a multiple layers of adjustable computing elements, got started in 2011, initially in speech and visual object recognition. A major breakthrough came in 2012 when a deep learning system performed better than previous methods in the ImageNet competition. Since then, deep learning has achieved remarkable results in areas like speech recognition, machine translation, medical diagnosis, and game playing. Its success brought interest in AI and trust that AI can deliver good results and perform well (Russell & Norvig, 2021, p. 45).

By understanding the history of artificial intelligence, it is possible to identify a certain pattern in its development and, through those patterns, make predictions about how the development of artificial intelligence will continue in the future. As the history of AI has shown, each technological leap builds on the innovations, successes, and failures of previous eras. This historical perspective is crucial to ensure that in the future we design AI tools that align with societal needs and address future challenges (Sitra, n.d.).

According to Sitra Megatrends 2023 (n.d.) the big change in the future includes well-being challenges, the battle for democracy, economic foundations are cracking and competition for digital power gears up. Technology is advancing rapidly, and new innovations are invented. Data collection and utilization are growing. In AI, key questions are in future: how data can be collected and used and who holds the expertise, resources, algorithms and patents. Environmental impact of new services is also one of the key questions. The European Union has taken steps to establish rules for AI and digital services in general, aiming to guide technological advancements toward more sustainable and socially responsible directions (Sitra, n.d.).

AI will undoubtedly remain at the centre of discussions in the coming years. At the same time, it is crucial to consider other technological developments and their connections

and wider impacts. Key areas include high-performance and quantum computing, fast wireless networks, and cybersecurity, which are essential for maximizing AI's potential. Additionally, resilience has become increasingly important. With extreme weather events and cyberattacks rising, it is vital to prepare for scenarios where networks fail, or power is unavailable (Sitra, n.d.).

Most experts are optimistic about ongoing progress of AI. The median prediction suggests that AI will reach human-level capabilities across a wide range of tasks within the next 50 to 100 years. In the next decade, AI is expected to contribute trillions of dollars annually to the global economy. However, some critics argue that achieving general AI could take centuries, and there are significant ethical concerns regarding fairness, equity, and potential harm caused by AI (Russell & Norvig, 2021, p. 1063).

AI can be used for a variety of purposes. It can be divided into narrow AI which is designed to perform specific tasks, and artificial general intelligence (AGI) which is still theoretical. Chatbots are a good example of narrow AI. The goal of AGI's development is to create a thinking machine (Goertzel & Potapov, 2015, p. 3).

In the business, AI applications have grown significantly. Companies are adopting AI to improve operational efficiency, reduce costs, and enhance customer experiences. AI is used for many different purposes, including automation of repetitive tasks, data analysis, decision-making, predictive analytics, and personalized customer service AI will augment human capabilities, freeing up workers to engage in more productive and higher-value tasks, and increase demand for jobs associated with AI (Manyika & Bughin, 2018).

Artificial intelligence is based on several technologies, including machine learning (ML), natural language processing (NLP), and customer data analytics. These technologies are fundamental to understanding how AI can be effectively applied to business processes. In addition to these AI also includes deep neural networks, algorithms that learn and

adapt with AI, deep learning, image recognition, reason and decision automation and emotional intelligence (Bulusu & Abellera, 2021, p. 7–10).

Machine Learning (ML) is a discipline focused on two interrelated questions: How can one construct computer systems that automatically improve through experience? And What are the fundamental statistical-computational-information-theoretic laws that govern all systems, including computers, humans, and organizations? Over the past two decades, machine learning has evolved from a theoretical concept into a widely used technology across various industries. It has become a very popular method for developing practical software in fields such as speech recognition, robot control, and customer service. In many cases, it is easier to train a machine by showing it examples of desired behaviour rather than programming all potential responses. The effect of machine learning has been felt across computer science and other industries, such as consumer services, the diagnosis of faults in complex systems, and the control of logistics chains (Jordan & Mitchell, 2015, p. 255).

According to Jung (2022, p. 57), ML methods combine three main components:

1. A set of data points that are characterized by features and labels
2. A model or hypothesis space that consists of different hypotheses
3. A loss function to measure the quality of a particular hypothesis

Each of these three components have design choices for the representation of data, their features and labels, the model and loss function (Jung, 2022, p. 57).

In practice ML can be used for example for helping financial companies, such as banks. It is possible to make an algorithm that can predict to whom the bank should give loans or credits. A bank always takes a risk when it lends money to a customer, so before lending money, the bank checks whether the customer has the ability to pay back their loan. Based on customer's current income, many banks perform some kind of analysis that helps them decide whether the borrower will be a good customer for that bank or not.

This kind of analysis is manual and time consuming so automation could make it better. It is possible to develop an algorithm which will generate probability. This probability value indicates the chances of the case that borrowers can't pay back their loans (Jalaj, 2018, p. 2).

Natural Language Processing (NLP) as a part of AI that enables communication between humans and computers. In customer service, NLP is important to applications, such as chatbots and virtual assistants. A chatbot interacts with customers in a natural language to respond to inquiries or perform transactions. Chatbots and virtual assistants are used because they are faster than humans and reduce costs by relieving human workers of repetitive tasks (Darlington Arinze, 2014, p. 33).

NLP is widely used in customer service for sentimental analysis, where customer feedback, reviews or social media posts are analyzed to get public opinion or find out customer satisfaction. While some of the consumer-generated content comes in the form of numerical values (e.g. reviews or rating scores), for example, the information posted on social media is in the form of text. This kind of text contains subjective evaluations, expressing so-called sentiment. There is a growing number of software companies that are offering sentiment analysis tools, but these tools have also some problems. While huge progress has been made in sentiment analysis due to advances in natural language processing, current approaches are still far from reaching human-like abilities. (Ge-Stadnyk et al., 2017, p. 1–2).

In today's fast-evolving market, companies need to develop dynamic skills and tools to stay competitive. These capabilities give businesses the agility to quickly adapt and reorganize their resources to seize new opportunities. The company's IT capabilities help here when they are integrated with the company's business strategies. However, it's important for IT investments to be well-planned to ensure they don't stop company's ability to make changes quickly (Kitchens et al., 2018, p. 544).

Big data analytics has become a key area where IT can support competitive strategies. With the growing importance of big data for business survival, companies need to shift from using general analytics to specialized tools that target specific business needs. One major challenge is breaking down organizational silos to facilitate smooth data sharing across different departments. IT have a huge role in this, and that is crucial for driving innovation and maintaining a competitive edge (Kitchens et al., 2018, p. 544).

The integration of data from various sources can be both expensive and complex. To effectively support big data analytics, companies must invest in robust data management and infrastructure. A focus on valuable strategies is essential to assess and integrate relevant data, particularly for customer analytics, which can provide a competitive advantage. By building a solid IT infrastructure for data integration, businesses can maximize customer lifetime value and drive improvements in both customer acquisition and retention. For this to succeed, companies need to adopt a framework that blends business strategy with IT strategy. This approach will help them create an infrastructure that not only supports advanced customer analytics but also generates lasting strategic value in the long run (Kitchens et al., 2018, p. 545).

Understanding business ecosystems has become crucial for companies in today's competitive environment. To stay ahead, companies need to quickly identify competitive actions, trends, and investment opportunities. These things often need insights across industries and markets. While Structured data sources can assist in these analyses, they are typically fragmented and fail to provide a holistic view of the dynamic interactions within ecosystems. Additionally, some unstructured data, such as news articles, press releases, and industry reports, contains valuable insights but is difficult to analyze manually due to the large amount of data (Basole et al., 2023, p. 1–2).

The real challenge is making sense of the huge volumes of unstructured data. For example, searching for information on strategic collaborations in artificial intelligence could bring up millions of documents, but going through all of them manually would be time-

consuming and inefficient. Artificial intelligence (AI), especially through natural language processing (NLP) and advanced text mining methods, can help finding key concepts and terms from these documents. However, this is not enough. Understanding how these concepts relate to each other in the context of the broader ecosystem is crucial (Basole et al., 2023, p.1–2).

Ecosystem intelligence involves human interpretation and judgement. While AI can help identify significant patterns and entities, decision-makers need a system that presents these findings in a clear and interactive visual format. This enables a deeper understanding and quicker, more informed decision-making. So, AI tools for ecosystem intelligence should not just extract important data but also allow users to explore and understand how different pieces of data are connected, helping them find valuable insights (Basole et al., 2023, p.1–2).

AI refers to technologies that mimic human cognitive functions, perform tasks similarly to humans, and have the ability to learn and improve over time. It is applied for example virtual agents, predictive analytics, recommendation systems, and speech analytics. In customer service, AI enhances customer experiences, automates processes, improves engagement, and gives new insights. AI has significantly changed customer service with three types of AI-enabled services: AI-supported services, where human agents use AI for decision-making or personalization, AI-augmented services, where AI interacts directly with customers or assists human agents, and AI-performed services, where AI completely replaces human agents in delivering services. Many studies have explored AI's effects on customer behaviour and experiences, for example, how chatbot affect user compliance. Other studies focus on AI's usability, service quality, and service types. AI transforms products and services, but it also changes business strategies and processes. It enables companies to improve their operations and capabilities (Lan et al. 2024. p. 3).

2.2 Customer service processes and their challenges

Exceptional customer service is increasingly recognised as a crucial contributor to business success and sustainability in today's highly competitive marketplace. Positive customer experiences help boost revenues, reduce churn, minimise costs and build long-lasting brand loyalty. With the shift towards service orientation, customer service has become a critical performance indicator and a key factor in determining a company's overall performance and profit margins across various sectors. Satisfied customers are more likely to make repeat purchases and recommend the product or company to others, ultimately contributing to higher sales and revenue growth. Positive service climate and customer-centric culture lead also to increased employee satisfaction and commitment. Ensuring service quality is crucial for customer satisfaction and loyalty. This means that companies that prioritize addressing customer complaints and resolving issues quickly achieve higher customer satisfaction and loyalty. In contrast, poor complaint handling can lead to negative experiences and harm company's reputation, directly affecting its performance (Buwah, 2024, p. 2119).

For customers, the key factors that contribute to satisfaction in a service environment are connection, response time, and the quality of the response. Live chat customer service systems help consumers make decisions by providing search assistance, guidance, and support. Customers often tend to overestimate how long they have been waiting for service, and they are particularly sensitive to delays when waiting online. Long wait times online, for example, create a negative service experience. On the other hand, when customers interact with a human-operated customer service system, they often have to endure queuing, connecting, and waiting for a response to solve their issues. AI-powered customer service systems, however, can offer instant responses to customer problems at any time. This advantage has led to the adoption of AI customer service in industries. For instance, nearly all (99,78%) of Uniqlo's customer service was AI-driven, and almost half (48%) of customers who used the AI service also made a purchase. Similarly, in the banking sector, 6000 customers of China trust Inc. use AI-enabled customer service daily, and that is resolving 88% of their interactions (Xu et al., 2020, p. 2–3).

Artificial Intelligence (AI) has become a game-changer in improving customer service, helping companies tackle some of the biggest challenges they face in serving their customers. As businesses recognize how important customer satisfaction is for success, AI has emerged as a key tool to ensure that service is faster, more personalized, and more efficient. One of the most common ways companies use AI in customer service is through AI-powered chatbots. These chatbots can handle a huge number of customer inquiries, work 24/7, and provide immediate responses. For example, DNB Bank has deployed AI chatbots to handle a large portion of customer interactions. By automating responses to frequent questions and simple requests, the bank has freed up human agents to focus on more complex issues. This not only shortens response times but also makes the whole process more efficient, and that benefits both customers and the bank. The use of chatbots in this way demonstrates how AI can affect customer service by making it quicker and more accessible for customers (Boost.ai, 2024).

In addition to chatbots, AI has also improved voice-based customer service. In healthcare, for example, AI-powered voice chatbots are helping patients with tasks like booking appointments, getting pre-visit information, and accessing other healthcare services. These systems can understand voice commands, allowing patients to get help they need without waiting for a human representative. This is particularly useful in healthcare, where phone calls and inquiries can quickly pile up. AI voice chatbots can handle these tasks efficiently and that reduces waiting times and makes services more accessible which ultimately enhances the patient experience (teneo.ai, 2024).

AI is also effective in predictive customer analytics, especially in industries like banking. By analysing customer data, such as spending habits and transaction history, AI can predict what services or products a customer might need next. For example, banks use AI to recommend products like loans or investment opportunities based on a customer's financial behaviour. This personalized approach increases the changes that customers will be interested the services what bank is offering. That improves loyalty and customer

satisfaction. Predictive analytics shows how AI can help businesses stay ahead of customer needs and offer more tailored solutions that feel relevant to everyone (Abdulsalam & Tajudeen, 2024, p. 32–34).

Another application of AI in customer service is Agent Assist technology, which supports human agents during real-time customer interactions. Telecom companies, for example, have adopted AI systems that provide live suggestions to agents while they are talking to customers. These systems can recommend answers, retrieve customer histories, and offer other helpful insights, allowing agents to solve problems more quickly and accurately. This technology helps agents resolve issues faster and more efficiently which is leading to better outcomes for customers. By enhancing the performance of human agents, Agent Assist tools improve overall customer service and satisfaction. Fo example, Vodafone implemented the TOBi chatbot to enhance customer support operations. TOBi helps customers with account management, technical support, and billing inquiries. TOBi handled over 2 million customer interactions within the first six months and it significantly reduced waiting times and improved service efficiency (Uzoka et al., 2024, p. 2501).

In retail, AI-driven self-service options are increasingly popular. Companies like Uniqlo have integrated AI into their customer service system, and that is handling most interactions through AI-powered tools. In Uniqlo AI system for example answer questions and recommend products. That gives customers fast and efficient service experience. This system has been incredibly successful. This shows that AI in self-service can help customers to get answers and also drive sales which is improving both customer experience and business results (Uniqlo, n.d.).

2.3 AI tools for customer service

The most used AI tools in customer service are chatbots, sentiment analysis, automated response systems, voice recognition AI, and predictive analytics. Each tool brings benefits and challenges, and it is important that companies select the appropriate AI solutions that align with their specific needs (Uzoka et al., 2024, p. 2505–2506).

Recent studies support the effectiveness of AI tools in making customer service outcomes better. AI implementation in customer service has improved both response speed and customer satisfaction, especially when it is used for repetitive tasks (Adam et al., 2020, p. 429). AI technologies like predictive analytics and natural language prosessing enhance the capabilities of chatbots and other tools (Uzoka et al., 2024, p. 2506). AI tools and technologies improve customer service by increasing productivity, reducing response times, automating tasks. These tools cand work 24/7 which also reduces costs. When businesses implement AI tools in a way that takes into account the protection of customer data, AI offers a big opportunity to improve customer service (Inavolu, 2024, p. 20).

AI replaces human labour by taking over specific tasks, rather than entire jobs, starting with mechanical tasks and progressing to more complex, higher-level tasks such as analytical, intuitive, and empathetic tasks. Mechanical intelligence is the easiest for AI to replace, followed by analytical, intuitive, and empathetic intelligences. As AI develops, machines will take over more tasks that humans used to do. This will change the skills that workers need. For example, analytical skills may become less important, while skills like intuition and empathy will be more valuable, especially in jobs that involve marketing with people. In the future, AI might even be able to do tasks that need human empathy (Huang & Rust, 2018, p. 155–157).

Chatbots are perhaps the most recognized AI tool in customer service. These virtual assistants are created to manage customer inquiries, offering quick answers to common questions and helping with basic troubleshooting. Some well-known chatbot platforms are Zendesk Chat, Drift, and Intercom. The key benefit of using chatbots is that they can provide 24/7 support, handling large numbers of customer interactions without needing a human agent. This is especially useful for businesses with customers in different time zones, because this ensures that service is available around the clock. Additionally, chatbots help lower operational costs and reduce human error by automating routine tasks. However, the technology has limitations. Chatbots primarily rely on pre-programmed

responses, which means they may struggle with queries that require human judgment (Lin, 2023, p. 3).

Chatbots have gained popularity recently due to advancements in natural language processing and machine learning, which allows them to respond in a more human-like manner. A good example is ChatGPT, which offers an enhanced language model and user experience. Chatbots are also being used more in education, either as helpers to improve students' understanding or as simulated students to support teachers (Lin, 2023, p. 3).

Psychological research suggest that meaningful conversation often brings joy, which has contributed to the rise of social chatbots. For example, Microsoft's Xiaoice is designed to offer communication, emotional support, and a sense of belonging, using empathy and personality to engage users better. Additionally, SeqGAN is a model for creating emotionally intelligent dialogues between humans and computers, but it hasn't yet fully meet expectations in generating emotional responses (Lin, 2023, p. 3).

Reinforcement Learning (RL) has also been applied to chatbots to improve response generation, dialogue management, and evaluation by maximizing rewards. While RL shows promise in making chatbots more natural and engaging, more research is needed for its use. For example, improving reward signals and training methods (Lin, 2023, p. 3).

Sentiment analysis is emotion AI or opinion mining. It focuses understanding the sentiment behind unstructured data. For example, in the sentence "Liam likes apples", Liam is the opinion holder, and his sentiment towards apples is positive. This emotional state is extracted from the text using techniques such as machine learning (ML), natural processing (NLP), and lexicon-based methods. With the rise of the internet, the amount of data generated is growing rapidly. Data from 2020 onwards has surpassed all data generated before, and this trend is expected to continue. The amount of data being generated has grown significantly, mainly due to the rise of web applications and the worldwide connectivity of the internet. The internet, which began in the 1970s for military use,

now has over 5,16 billion users. Social media platforms are reaching 4.62 billion users. This widespread use has led to a surge in people sharing opinions through blogs and social media posts. As a result, data generated online is a valuable source for various applications (Raghunathan & Kandasamy, 2017, p. 2).

The growth of sentiment analysis is also closely tied to the increasing use of chatbots and virtual assistants. These tools use natural language processing (NLP) and sentiment analysis to interpret user queries and provide relevant responses. Their aim is to understand the emotional state of the user. Over the past decade, sentiment analysis has advanced from traditional lexicon-based methods to more sophisticated machine learning and deep learning techniques, such as supervised machine learning, deep learning, and transfer learning. These improvements have made sentiment analysis more accurate and nuanced, and businesses get valuable insights into customer emotions and trends with them (Raghunathan & Kandasamy, 2017, p. 2).

As Raghunathan and Kandasamy (2017, p. 2) present, sentiment analysis has various practical applications, which are helping businesses analyze large volumes of text data and gain insights for decision-making:

1. Public opinion via social media. Before social media, organizations relied on media outlets to understand public opinion. Now, stakeholders have direct access to social media data, which allows them to collect and analyze opinions using technologies like Tweeby and TextBlob. This shift has made it easier to track public sentiment on various topics and detect fake news. This task would have been challenging using traditional methods like newspapers.
2. Product analysis. As e-commerce has grown quickly, more customers are leaving reviews about products. This makes sentiment analysis important for understanding what customers think. By analyzing these reviews, sentiment analysis helps e-commerce sites and industries categorize opinions as positive, negative, or neutral, giving businesses useful feedback.

3. Stock market. The stock market reflects the state of the economy and is highly sensitive to real-world events. Sentiment analysis has been used to predict market trends by analyzing public reactions to events like elections or disasters. Although the stock market is volatile, sentiment analysis has shown potential in predicting market movements based on public sentiment.
4. Enterprise management. As businesses face increasing competition, traditional management strategies are not enough for sustainable growth. Companies are using sentiment analysis to understand the emotional state of their employees and improve overall organizational efficiency.

Sentiment analysis, or emotion AI, involves identifying, extracting, and quantifying the emotional state of subjective data. According to Raghunathan and Kandasamy (2017, p. 2) it can be performed at three levels:

1. Document level which determines if the overall sentiment of a document is positive, negative, or neutral.
2. Sentence level which evaluates each sentence for sentiment and categorizes it as positive, negative, or neutral.
3. Feature level which focuses on identifying the sentiment towards a specific feature or entity mentioned in the text. For example, in the sentence “The film had a good story”, “film” is the entity, and “story” is the feature.

Sentiment analysis consist of two main stages: data pre-processing and classification. Pre-processing involves tokenization, which means converting words to their root forms through stemming or lemmatization and removing stop words. The second stage involves applying a classification algorithm to the pre-processed data to categorize it according to the sentiment detected (Raghunathan & Kandasamy, 2017, p. 2).

Automated response systems manage common customer queries with different tools. The main advantage of automated response system is their ability to reduce response

times, which allows customers receive quick answers to their inquiries, even during off-hours. A chatbot can handle routine tasks such as looking up order status or scheduling appointments. The most advanced bots use generative AI to personalize responses to customer questions. Companies can also automate email and social media autoresponders. They can automatically acknowledge customer inquiries and provide initial information or help. In addition to these, companies can use for example automated triaging, which means that human agent can categorize and route simple support requests to the right customer service agent for faster handling. Automated surveys and feedback requests are one kind of tools to improve organization's customer service. An automated system can send out a survey immediately after an interaction and gather critical insights from customers. AI can also give proactive support which is, for example notifying customer of knowing issues like shipping delays or system outages (Service, 2025).

According to Zendesk (2025), examples of automated customer service are: AI agents, IVR software, autoresponders, AI knowledge base, predictive analytics, ticketing systems, intelligent routing, automated notifications, workflow automation and automatic translation. Zendesk example of automated customer service gives a perspective on how an automated customer service situation works:

Step 1.: Customer navigates to the support page on website.
Step 2.: An AI agent greets customer and gathers information about problem.
Step3.: The AI agent directs the customer to an article discussing the issue in company's knowledge base.
Step 4.: The article instructs customer to perform a certain task. If the task doesn't work, the AI agent can offer a new solution or route the customer's ticket to a human agent (Zendesk, 2025).

There are different AI tools, and they all have their pros and cons. Table 1. Summarizes the most commonly used tools, their pros and cons, and their intended uses. One of the most common AI tools used today is chatbots. They offer real-time support by managing

various customer inquiries, such as answering frequently asked questions or helping with common issues. Popular platforms like Zendesk Chat, Drift, and Intercom allow businesses to engage with customers 24/7 in an efficient way. These bots ease the workload of human agents by taking care of repetitive queries. That way real human workers can focus on more complex and personalized issues (Lin, 2023, p. 3).

Another important AI tool in Table 1. is sentiment analysis, which helps customers understand the emotional tone of customer interactions. Tools like MonkeyLearn, Lexalytics, and Aylien, use natural language processing and machine learning algorithms to analyze large volumes of text data, including social media posts, emails, and customer reviews. This tool is particularly beneficial for monitoring brand reputation and managing customer relations in real-time (Luo et al., 2021, p. 3).

Automated response systems are another widely used AI solution. These systems allow businesses to automate replies to common inquiries which enables quick response times and reduces operational costs. Tools like Freshdesk, Zoho Desk, and HubSpot integrate automated responses with knowledge base systems, and this enables customers to resolve issues independently without waiting for human assistance. While automated response systems improve efficiency, they can sometimes lack the personalized touch (Fokus Answering Service, 2024).

Voice recognition AI is increasingly used tool in industries such as banking and healthcare. Voice recognition tools, such as Google Cloud Speech-to-Text and IBM Watson Speech-to-Text, allow customers to interact with service platforms via voice command. This makes service more accessible, particularly for customers with disabilities or those seeking a more hands-free experience. While voice recognition AI can make services more accessible and faster, there are still some challenges with it, such as understanding different accents and dealing with background noise (Saka et. Al, 2023, p. 13).

Final tool in Table 1. Is predictive analytics. It is a powerful AI tool which is used to forecast future customer behaviours and trends. By analyzing customer data, businesses can anticipate customer needs and personalize their service offerings. Tools like Salesforce Einstein and IBM Watson Analytics use machine learning models to predict outcomes, such as when a customer is likely needing support or what type of product they may purchase next. However, there are also things to consider when using predictive analytics. Predictive analytics relies on customer data, so businesses must ensure they comply with regulations like GDPR and CCPA. Also, the accuracy of predictive analytics depends on the quality of the data used and incomplete or incorrect data can lead to inaccurate predictions and irrelevant support efforts (Nice, 2025).

Table 1. Comparison of AI tools for customer service

AI Tool	Examples	Benefits	Drawbacks	Best Use Case	Customer Service Use	Technical Use
Chatbot	Zendesk Chat, Drift, Intercom	24/7 availability, handles high volume of simple inquiries, cost-effective, reduces human error	Limited by pre-programmed responses, struggles with complex queries, lack of human touch.	Handling FAQs, basic troubleshooting, initial customer contact.	Provides instant support, schedules meetings, routes complex issues to human agents.	Requires interaction with messaging platforms, regular updates to improve conversational flow.
Sentiment	MonkeyLearn,	Improves customer	Accuracy can be affected by	Analyzing customer	Identifies customer mood and	Analyzes large volymes of text

AI Tool	Examples	Benefits	Drawbacks	Best Use Case	Customer Service Use	Technical Use
Analysis	Lexalytics, Aylien	experience by understanding emotional tone, helps proactively address issues.	poor data or algorithm misinterpretation, struggles with sarcasm.	sentiment from social media, email, or chat interactions to bring satisfaction.	urgency, guides the next steps in service delivery.	data using machine learning algorithms to detect sentiment.
automated response system	Freshdesk, Zoho Desk, HubSpot	Automates responses to repetitive queries, reduces response time, improves efficiency.	May lack personalization, requires ongoing updates to remain effective.	Managing common queries in email or chat, freeing up agents for complex issues.	Responds with preset solutions, sends autoresponses, escalates if needed.	Incorporates predifined templates for common customer queries.

AI Tool	Examples	Benefits	Drawbacks	Best Use Case	Customer Service Use	Technical Use
voice recognition ai	Google Cloud Speech-To-Text, IBM Watson Speech-To-Text	Enables voice-based customer service, increases accessibility, speeds up service.	Requires accurate speech recognition, might struggle with accents or noisy environments.	Voice-activated customer service, accessibility for impaired customers, call center automation.	Converts customer speech into text, provides real-time responses via voice assistants.	Integrates with voice recognition software to transcribe and interpret customer conversations.
Predictive analytics	Salesforce Einstein, HubSpot AI, IBM Eatson Analytics	Anticipates customer needs, personalizes service, predicts outcome, improves decision-making.	Requires large datasets to function effectively, can be expensive to implement. Data usage and requlations.	Forecasting customer needs, customizing marketing strategies, improving	Analyzes data patterns, forecasts service demand, adjusts customer service strategy.	Uses machine learning models to analyze historical customer data and predict future.

AI Tool	Examples	Benefits	Drawbacks	Best Use Case	Customer Service Use	Technical Use
				decision-making in customer service.		

2.4 Key factors in successful AI implementation

Artificial Intelligence has become an important tool across various sectors. It is changing processes in industries like healthcare, finance, marketing, and customer service. However, its adoption is not always so easy. Understanding the factors that affect AI acceptance and obstacles and strategies to overcome them, is essential. AI acceptance depends on both technical and human factors. One important factor is how useful people think AI systems are. Users are more likely to use AI if they believe it makes their work faster and more accurate compared to traditional methods. Also, it is important that these tools are easy to use. If AI systems are complicated or require a lot of training, users may be discouraged from using them. This is why it is important to design AI tools that are easy to use (Rane et al. 2024, p. 51).

Trust in AI is another crucial factor. Users need confidence in the reliability, transparency, and fairness of AI systems. Trust is built when decision-making processes are clear and explainable, which is important to avoid worries about bias and fairness. Explainable AI (XAI) is one way to make AI more transparent, showing users how it makes decisions, which helps build trust (Rane et al. 2024, p. 51).

Worries about job loss are also a big challenge, especially in industries where AI can replace regular tasks. To solve this, companies should focus on training workers for new

roles that AI can't easily take over. There are also ethical and legal issues, like data privacy and who is responsible for AI decisions, that make it harder to adopt AI. The absence of clear rules makes these problems worse, so it's important to have guidelines to ensure AI is used ethically. In addition to this, technical challenges, like making AI work with existing systems, can be difficult. The computing power and data needed to train AI models can be expensive, so investing in the right infrastructure is necessary (Rane et al. 2024, p. 51).

To tackle these challenges, several strategies can be used. One effective method is to involve users in the design and development of AI systems. This helps make sure that AI tools meet their needs and expectations. This also builds trust by addressing concerns about usability. Education and awareness programs are also important to help users understand both the benefits and limitations of AI, which can reduce misunderstandings and fears. Clear ethical rules and guidelines are needed to create a trustworthy AI environment, which is focusing on transparency, fairness and responsibility. Ongoing monitoring and checks of AI systems are also important to spot and fix problems, which helps build trust and encourages acceptance of AI technology (Rane et al. 2024, p. 51).

2.4.1 Technical factors

The technical requirements for using AI tools in customer service are usually the first thing companies have to worry about. Integrating AI into existing systems is a challenge for most businesses. Usually when business is looking for proper implementation of AI into its existing system, implementation will require help of AI solution providers. AI tools need a strong IT system that can handle complex algorithms and large amounts of data. This might create a storage issue for business. Data driven automation in business operations may also cause issues related to data security. Replacing outdated infrastructure with traditional legacy systems is still a major challenge for most organizations. Most Artificial Intelligence based solutions have a high level of computational speed. AI-based systems will be able to achieve more speed if business has a substantial infrastructure and high-end processors. The function and performance of business intelligence

operations heavily rely on AI algorithms. Enterprises planning to implement AI should have a clear idea of how AI-based solutions or technologies work and will be able to transform their outcomes (10xds, 2025).

It is also important to have strong methods to find and fix bias in AI systems. AI can accidentally pick up biases from the data it's trained on, which can lead to unfair results. To avoid this, AI systems should be checked regularly for bias. Using a variety of data when training the AI is also important to make sure it treats everyone fairly. In addition, AI should be built to spot bias and fix it right away, making sure that its decisions are fair for all. These steps are necessary to make sure AI is used in a responsible way (Inavolu, 2024, p. 20).

Choosing the right AI tool for a business is an important technical factor in ensuring successful implementation. Because there are many options available, selecting the best tools can be challenging. The first step is to know the specific needs of the business. The budget and the technical skills of the team must also be taken into account. User-friendly tools may be necessary for teams with less technical expertise and more complex. Tools may be required for teams with advanced knowledge (T_HQ technology and business, 2024).

AI tools can be grouped into different categories based on their function. Automation tools help with repetitive tasks, data analysis tools assist in making data-driven decisions, and customer service tools, such as chatbots, enhance customer interactions. There are also tools for content creation, which help marketing teams with generating content, graphics, or videos (T_HQ technology and business, 2024).

After narrowing down the options, the features of the tools should be evaluated. It is important to ensure that the tools provide the necessary functionalities, such as integration with existing systems or usability. It is also important to consider the support offered by the tool providers, like helpful guides and responsive customer service. Before

choosing a tool, it's important to test it first. Many providers offer free trials, so the tool can be tested in the business setting to see if it meets expectations. Since AI tools often deal with sensitive data, it's important to choose ones that follow data protection rules and have strong security features, like encryption and access controls (T_HQ technology and business, 2024).

2.4.2 Organizational factors

Artificial Intelligence is changing how businesses operate. Companies are investing heavily in AI, but implementing AI without aligning it with business objectives often leads to wasted resources and limited impact. To get better result from AI, businesses need to connect their AI plans with their main goals. Business objectives are clear goals that a company works towards. They help guide decisions, shape plans, and decide how resources are used. Common objectives include increasing sales, keeping customers, lowering costs, and improving products. For AI projects to be successful, they need to support these goals (RTS labs, 2024). The most common business objectives are presented in Table 2.

Table 2. Types of business objectives

Business objectives	**Explanations**
Strategic goals	Focus on long-term aims like growing in new markets or building the brand (RTS labs, 2024).
Operational goals	Aim to make processes better, like improving supply chain or product quality (RTS labs, 2024).
Financial goals	Focus on clear numbers, like increasing revenue or cutting costs (RTS labs, 2024).

Customer goals	Aim to improve customer satisfaction, keep loyal customers, or attract new ones (RTS labs, 2024).

These objectives are important to AI implementation because AI is a strong tool, but its value depends on how it is used. If a company uses AI without clear goals, the results may not be useful. For example, a business might us AI chatbots to improve customer service, but without clear goals, like speeding up response times or improving customer service ratings, the project may not meet expectations. Aligning AI with business goals requires thoughtful planning and collaboration. Table 3. presents the most important steps in implementing AI tools (RTS labs, 2024).

Table 3. Steps in implementing AI tools

Steps in implementing AI tools	Explanations
Identify business needs	Answering the questions: Which processes are inefficient or time-consuming? What areas could benefit from better insights or predictions? Where are resources being underutilized? (RTS labs, 2024).
Define clear AI objectives	Clear objectives help guide AI projects and ensure they align with business goals. These objectives should explain what the AI project aims to achieve and how success will be measured (RTS labs, 2024).
Collaborate across departments	AI projects usually need help from different teams like operations, IT, marketing, and finance. Working together ensures that AI solutions are useful and solve real problems (RTS labs, 2024).

Steps in implementing AI tools	Explanations
Monitor and adjust	AI systems constantly evolve and require continuous evaluation. Monitoring performance metrics helps keep them aligned with business goals. If objectives or conditions change, the AI model or its settings should be adjusted (RTS labs, 2024).

Aligning AI initiatives with business goals is a challenging task to organizations. Although the benefits of artificial intelligence are well known, achieving these benefits is often difficult because of different obstacles, such as technical, organizational, and cultural issues. To make sure AI projects are successful and produce clear results, these challenges need to be tackled step by step (RTS labs, 2024).

One of the main challenges in aligning AI with business goals is not having clear objectives. Companies often use AI because it seems like innovative tool or because competitors are using it, rather than having a clear plan. Without clear goals, AI projects can become unfocused, and they may not deliver real value. For example, a retail company might invest in AI to improve speed, personalization, or service quality. This lack of focus can lead to wasted efforts and resources. To solve this problem, it's important to clearly define what the AI project should achieve and make sure it fits with the overall business goals. Involving people from different departments can help set clear and useful objectives. Using methods like OKRs (Objectives and Key Results) or SMART goals can also make sure the goals are clear and measurable (RTS labs, 2024).

Data quality and access are also big challenges. AI systems depend on data, and if the data is poorly managed, it can make the system less effective. Common problems include data being in inconsistent formats, incomplete, or scattered across different departments. To fix these data problems, companies should focus on cleaning and organizing

their data. Centralized storage systems, such as data lakes or warehouses, can help collect data from different departments in one place, making it simpler to manage and analyze (RTS labs, 2024).

Another big challenge is resistance to change. Employees might resist AI because they worry that it will take their jobs or disrupt their usual work. This can slow down the adoption of AI and make it less effective. To reduce this resistance, it's important to involve employees in the process from the start. Clear communication about why AI is being used and how it helps can ease their concerns. Offering training programs can also help employees learn to work with AI systems. It's important to show how AI can support their work instead of replacing it (RTS labs, 2024).

Resource limits make it harder to align AI projects with business goals. Many organizations, especially small and medium-sized businesses, have trouble getting the technical skills, equipment, and funding needed for AI projects. The costs of hiring experts, maintaining AI models, and buying the right hardware and software can be too high. To solve these resource problems, businesses can look into ready-made AI solutions from cloud providers, which are usually cheaper and can grow with the company. Working with outside experts, vendors, or universities can also give businesses the skills and resources they need. Starting with smaller, high-impact projects can show the potential value of AI, making it easier to justify more investment. Additionally, government grants or incentives may help cover some of the costs for adopting AI (RTS labs, 2024).

Unrealistic expectations about what AI can do and how quickly it will work are also a common problem. AI is often seen as a quick solution to business problems, but in reality, AI models take time to develop, test, and improve. Results usually come gradually, not instantly, so expectations need to be adjusted. To fix this, companies should set realistic goals for AI projects and teach everyone involved that AI development takes time. Breaking projects into smaller steps and celebrating early successes can help keep things moving forward and manage expectations (RTS labs, 2024).

Successfully aligning AI with business goals needs careful planning, good leadership, and teamwork across departments. Leaders play an important role by making sure AI projects fit with the company's bigger goals. Starting with small pilot projects helps test AI solutions and improve the approach before expanding. Focusing on clear ROI and training employees are also important for success. Working with the outside experts can help overcome resource challenges and speed up AI adoption. Regularly monitoring and improving AI systems is important to make sure they keep adding value. Companies need to check how their AI models are performing, review them, and use feedback from employees and customers to make improvements. By doing this, companies can make sure their AI projects support business goals and deliver real results (RTS labs, 2024).

2.4.3 Human factors and ethical considerations

Human factors are often the most challenging element of AI implementation. The key human factor in AI adoption is employee mindset and acceptance. Even though generative AI tools like ChatGPT have developed quickly, many employees are still unsure and resistant to using AI. They worry about job security, the complexity of the technology, and the ethical issues around AI. This resistance is seen more in older workers, while younger workers are more familiar with AI tools. AI's ability to learn on its own and make decisions without being programmed raises concerns about how transparent and accountable it is (Golgeci et al. 2024, p. 1–3).

When employees resist change, they experience several reactions, such as mistrust, existential questioning, and technological reflection. Mistrust comes from worries about AI's reliability and possible dangers. Existential questioning is about doubts regarding the importance of human roles in a working place with AI. Technological reflection involves thinking about both the good and bad effects of AI. These reactions are connected, and organizations need to understand how to manage them (Golgeci et al. 2024, p. 5–10).

At the organizational level, things like making AI easier to use, combining AI with human work, and making AI seem trustworthy can help reduce resistance. Making AI accessible means making it simple and user-friendly, which lowers mistrust. Human-AI augmentation focuses on having AI work together with people to improve teamwork instead of replacing jobs, which helps with concerns about job roles. Lastly, AI legitimation makes sure employees see AI as useful and valuable by clearly explaining its purpose and benefits. These actions help reduce resistance and make it easier for AI to fit into the workplace (Golgeci et al. 2024, p. 5–10).

Another human factor to consider is customer acceptance of AI-driven service. While many customers appreciate the convenience and speed of AI-based services, others may feel that AI lacks empathy and personal touch of human interactions. Companies must have a balance between AI and human service, so that customers receive personalized assistance when needed. Customers' understanding of their own role and AI's role, their motivation to use AI, and their ability to use AI devices make them more willing to adopt AI. However, privacy concerns make usually less likely to accept AI, especially when it comes to understanding their role. Trust in AI technology, on the other hand, makes customers more willing to use AI when they feel capable of using it (Choi, 2023, p. 8–11).

Customer acceptance of AI services depends on several factors, including the customer's characteristics and the technology itself. Key factors for acceptance are role clarity, motivation, and ability. Trust in the technology, privacy concerns, and how "creepy" the AI feels also matter. AI adoption is also influenced by how well the technology fits with customers' values and the risks they see in using it. It is important for customers to understand the role of AI in service interactions. Clear communication about what customer and AI are each responsible for helps build trust and transparency. This clarity is necessary to avoid confusion and improve satisfaction, especially in important areas like self-driving cars or healthcare (Ostrom et al., 2019, p. 84–97).

Individual differences, like experience with technology, age, and culture, affect how people accept AI. Younger people and those from regions like Asia are more willing to use AI. How well customers can use AI devices also affects their acceptance, as AI can either help or limit their abilities based on how it is designed. Although AI has many benefits, concerns about privacy, control, and social effects are still important. Privacy issues, especially with personalized services, may stop people from using AI, even though these services can be very useful. Also, AI replacing human interaction could make people feel isolated or harm social skills, especially in areas like eldercare or childhood development (Ostrom et al., 2019, p. 84–97).

Positive effects of using AI include more personalized services, better abilities, time savings, and improved well-being. AI can create custom experiences, like personalized recommendations or learning that adapts to needs, which can make customers happier. AI also makes things more convenient, helping people save time and use services more easily. However, there are also negative effects, like service failures, loss of control, and bias in AI decisions. AI might make bad recommendations or be biased, which can harm consumers. Also, AI in service interactions can make people feel like they are losing privacy or control over their personal data. AI has many benefits in services, but customers will accept it if there is trust, clear communication, and privacy concerns are handled well. Companies need to manage these factors to make sure customers have good experiences and avoid problems (Ostrom et al., 2019, p. 84–97).

Ethics and governance have a critical role in the successful implementation of AI systems. To build trust with customers and meet legal requirements, organizations must focus on ethics in their AI strategy. Creating strong AI governance frameworks is essential. These frameworks give clear rules for using AI responsibly, making sure AI systems match the organization’s values and follow the rules. A good governance framework should cover key areas like accountability, transparency, and data security to help organizations use AI properly. Transparency is the most important ethical guideline. It focuses on how AI is used, being open about AI’s actions, and explaining AI’s decisions. Privacy guidelines

focus on protecting personal data, making sure organizations follow GDPR guidelines and anonymize data. Security guidelines are also important, and many organizations combine privacy and security to keep AI safe and reduce risks (Balasubramaniam et al., 2023, p. 6–8).

Fairness is important for both professional services and B2C organizations, aiming to remove bias and discrimination in AI systems. Accountability guidelines make humans responsible for overseeing AI decisions. These guidelines also include monitoring and certification. Reliability guidelines vary between organizations. Professional services focus on safety and the public sector emphasizes using reliable data. Ethical guidelines also highlight the importance of building trust. Transparency helps with privacy, security and fairness issues. Explainability makes AI's decisions easier to understand for users and developers (Balasubramaniam et al., 2023, p. 6–8).

The most important requirements related to transparency and explainability are understandability, traceability, and auditability. Understandability means clearly explaining how AI is used. Traceability focuses on tracking AI decisions and the data behind them. Auditability means that AI systems should be able to be checked for accountability. For these reasons transparency and explainability are important for building trust, fairness, and improving AI system quality (Balasubramaniam et al., 2023, p. 6–8).

According to UNESCO (2024), there are ten approaches to AI ethics.

1. Proportionality and Do No Harm.

   AI systems should only be used as much as needed to achieve a valid goal. Risk assessments should be done to avoid any harm that could come from their use.
2. Safety and security.

   Unwanted safety risks as well as security risks should be avoided and addressed by AI actors.
3. Right to Privacy and Data Protection.

Privacy should be protected throughout the entire AI process. Strong data protection measures should also be set up.

4. Multi-stakeholder and Adaptive Governance & Collaboration.
   International law & national sovereignty must be respected when using data. Also, involving different groups of people is important for inclusive AI governance.
5. Responsibility and Accountability.
   AI systems should be auditable and traceable. There should be checks, impact assessments, audits, and careful reviews to prevent conflicts with human rights and harm to the environment.
6. Transparency and Explainability.
   The ethical use of AI systems depends on their transparency and explainability (T & E). The level of T & E should fit the situation, as it may conflict with other principles like privacy, safety, and security.
7. Human Oversight and Determination.
   Member States should ensure that AI systems do not displace ultimate human responsibility and accountability.
8. Sustainability.
   AI technologies should be evaluated based on their impact on "sustainability", which includes goals like those in the UN's Sustainable Development Goals.
9. Awareness & literacy.
   The public's understanding of AI and data should be improved through open education, civic involvement, digital skills, AI ethics training, and media literacy.
10. Fairness and Non-Discrimination.
    AI developers should support social justice, fairness, and equality, making sure AI benefits are available to everyone (UNESCO, 2024).

2.4.4 Leadership in AI implementation projects

Managing AI implementation projects requires strong leadership to guide the process from conception to deployment. Leaders must be capable of coordinating efforts across different departments, ensuring that technical, organizational, and human factors are

aligned. They must also be proactive in addressing challenges and adjusting strategies as needed. Global spending on AI reached $118 billion in 2022, but many companies report little success, with only a few AI projects being fully implemented. Even big tech companies like IBM and Amazon have trouble expanding AI. Despite the many benefits of AI, such as quicker communication, better predictions, and automation, many companies face big challenges when trying to use it (Ångström, 2023, p. 5–6).

Successful AI implementation needs continuous learning and adjustment. Pilots and experiments are important for starting AI projects and improving understanding within the organization. However, as AI is used in more complex situations, initial successes can become harder to maintain. As companies grow in their use of AI, they face challenges with data management, advanced algorithms, and a broader range of partners. To handle these challenges, companies often choose simpler, more staple tools rather than new, complex solutions (Ångström, 2023, p. 13–19).

A key part of adopting AI is having the right people. It's not only about the technology, but also about building a team that can manage AI changes. To use AI successfully, companies should invest in training and encourage teamwork to make sure AI adds value instead of becoming a problem. As companies become more AI-driven, they need to organize their data better, handle the increasing complexity of AI, and work with external partners. The challenge increases as AI affects customers and partners, requiring strong relationship management skills and attention to regulations (Ångström, 2023, p. 13–19).

To get a clear picture of AI project management, it is a good idea to look at the operations of a real company, for example company called Consult. Consult is a North American AI consultancy, and it helps organizations leverage AI to solve complex business problems. Consult was founded in 2017, and it has made significant progress in managing AI projects, mainly in logistics and supply chain industries. The company offers advisory services and custom software, such as machine learning models and optimization algorithms to its clients. However, despite its success, Consult faces challenges in managing

AI projects, especially when balancing traditional project management, agile methods, and AI workflows (Vial et al., 2022, p. 671–675).

Consult manages AI projects using three main strategies: traditional project management, agile methods, and AI-specific workflows. The company organizes projects into five phases with regular checkpoints to review progress and feasibility. Agile practices help teams work in short cycles and involve customers early. However, the complexity of AI, especially with data science and machine learning, often causes uncertainties that make it harder to manage project goals and deadlines (Vial et al., 2022, p. 672–678).

Conflicts happen between the different methods: traditional management, agile, and AI workflow. For example, traditional project management expects uncertainty to decrease over time, but AI projects often face more uncertainty as data issues and model issues come up. Agile practises focus on fast work cycles and delivering products, while the AI workflow uses small experiments that may not give quick results. These different approaches can clash, making it hard to manage customer expectations and align on project goals (Vial et al., 2022, p. 677–682).

To solve these conflicts, Consult uses several strategies. One is to “fire” customers if they are not ready for an AI project, based on their AI maturity and data quality. Another is to rethink the definition of “done” in AI projects, focusing on testing and experiments instead of fixed deliverables. Consult also checks the value of extra data science work to make sure technical progress matches business goals. Lastly, the company pairs business consultants with data scientists to link technical skills with business knowledge (Vial et al., 2022, p. 683–686).

3 Research Methodology

This study uses a qualitative research method to understand how artificial intelligence tools can improve customer service processes in companies. A qualitative method was chosen because it helps explore the experiences, views, and strategies that businesses use when they are adopting AI tools since it focuses on understanding how individuals or groups perceive and interpret social or human-related issues. Instead of following a strict framework, this approach allows for flexible research questions and procedures that evolve throughout the study. Data is usually collected in natural setting, such as interviews or observations, where participants share their experiences. Unlike quantative research, which focuses on numbers and statistics, qualitative research looks at human experiences and how organizations operate in a more detailed way. This approach is especially useful for studying complex and constantly changing topics where technical, organizational, and human factors all play a role (Creswell, 2023, p. 4).

3.1 Research design

Research designs are usually divided into three types: quantative, qualitative, and mixed methods. These types show whether the data collected are numbers (quantative), non-numbers like words or images (qualitative), or mix of both. Quantative methods use numbers, which are often collected through tools like questionnaires and analyzed with statistics. Qualitative methods focus on non-numeric data, such as words or pictures, which are often collected through interviews or observations. Mixed methods combine both quantative and qualitative approaches (Saunders & Thornhill, 2023, p. 181–186).

Quantative research is often linked to positivism and a deductive approach, where data is collected to test existing theories. It can also use an inductive approach to create new theories. Quantative designs usually involve fixed methods for collecting data and analyzing it with statistics to find results that can apply to larger groups. (Saunders & Thornhill, 2023, p. 181–186).

The part of this study focused on examining statistics about what people thought about various AI tools. Two statistics were collected from the Finnish Data Archive Aila and analyzed using SPSS software. The statistics included multiple-choice questions, which respondents were asked to answer by selecting the most appropriate option. The answer options were assigned numerical values, and in this research these numerical tables were analyzed with SPSS and graphs were drawn to illustrate the answers and their differences. These studies provided broader information from a larger group of people about how people view AI tools. These studies addressed questions related to people's fear of losing their jobs when AI tools enter the company (EVAn Arvo- ja asennetutkimus kevät 2022) and people's thoughts about the security of these tools (Turvallisuuspolitiikka- ja maanpuolustustutkimus 2021).

This research is based on an approach that focuses on understanding social realities through the experiences of individuals and organizations. This is especially important when studying AI in customer service because the success of AI tools depends not only on their technical abilities but also on how businesses perceive, use, and integrate them into their daily operations. To get a good view of how AI is adopted, its benefits, and the challenges it brings, this thesis includes semi-structured interviews with key people involved in the process (Creswell, 2023, p. 17).

This thesis also includes elements of a case study approach. It looks at how different companies use AI in customer service. Case studies are useful because they provide real-world insights by gathering detailed information. This method helps achieve the goal of understanding not just how AI tools work, but also how companies plan and manage their use to ensure successful results (Woodside, 2016). Some of the research findings were obtained from literature.

3.2 Data collection

In this thesis, data was collected from both primary and secondary sources to get a clear picture of how AI is used in customer service. The primary data came from semi-

structured interviews, while the secondary data included a literature review and statistical information from the Tietoarkisto Aila. Semi-structured interviews were used as the main way to collect data because they provide flexibility. This method is common in qualitative research since it helps researchers understand people's experiences, opinions, and attitudes in depth (Ruslin et al., 2025, p. 10–11). A total of three participants were found for the interview.

Participants for the interview were selected based on their knowledge and experience related to the research topic (Patton, 2014, p. 437). The interview questions focused on how AI is used in customer service, the challenges of implementing it, and the best ways to make it work successfully. The interviews were held online using Microsoft Teams. This made it easier for participants to join from any location. Each interview lasted about 40 to 60 minutes, and they were recorded with the participants' permission to ensure accurate interpretations. The transcripts were then studied using thematic analysis, which is a common method for finding key patterns and themes in the data. Thematic analysis is a way to find, examine, and describe patterns in qualitative data. It helps organize and explain the data in detail and can also be used to understand different parts of a research topic (Braun & Clarke, 2008, p. 79–81).

Three interviews were conducted for this research. The names of the interviewees who are participating to this research have been coded as: Participant 1, Participant 2, and Participant 3.

Participant 1 is an entrepreneur of a Finnish social media company that makes content for various social media channels, for example, TikTok, Instagram and YouTube, and generates revenue through commercial partnerships and the social media channels' own earning opportunities, for example, YouTube's partner program. The company employs one person, the founder. The company uses artificial intelligence to create and edit content and the company has also automated customer service by automating responses to

private messages on social media channels. To automate responses, the entrepreneur uses Instagram's own response automation tool.

Participant 2 is a nurse of a home care facility belonging to the Southern Finland Hospital District. Her workplace uses an automated medication dispenser in clients' homes. The automated medicine dispenser is part of a larger shift toward digitalizing customer service in healthcare, where automation helps support nursing staff and enhance patient-centered care. The device alerts users when it's time to take their medication and dispenses the correct pre-dosed amount medicine. Its primary goal is to reduce the need for frequent nurse visits while promoting independent living for customers in their own home. Unlike chatbots or virtual assistants, a medicine dispenser is a tangible physical automated device, which provides an interesting point of comparison for other entrepreneur interviews.

Participant 3 is a project manager at a medium-sized Finnish retail company. The company has implemented a chatbot to improve customer service. From time to time, especially during the high season, customer service receives a lot of inquiries about the same things, and the chatbot was implemented in the company to answer these frequently asked questions. This frees up human customer service staff to handle more difficult customer inquiries. However, if the customer wishes, they can ask the chatbot to connect to a customer service representative, allowing the customer to continue the conversation with a human customer service representative.

A literature review was conducted to give backround on AI in business and customer service. It included for example research articles, reports, and books about AI use, automated customer service, and digital change. These previous studies helped to better understand the topic and they also helped to identify areas where further research would be needed. A Literature review can be used to study theories, review evidence or field, or compare different theories. It can focus on small topic, like the connection between two factors, or take a wider look at trends in research. Literature reviews also help find

gaps in research, plan future studies, or give a general understanding of a topic. They can also help develop new ideas or models by building on existing knowledge (Snyder, 2019, p. 334).

This thesis also used two datasets from Tietoarkisto Aila to support the research. These datasets provided statistical information on people's thoughts and concerns about AI. The data included opinions on AI-related security risks and possible misuse, as well as views on how AI and robotics impacts jobs. The results were presented using pie chart and bar graph to highlight key patterns. Since no complex statistical methods were used, the study remained qualitative. These statistics supported and deepened the understanding of people's emotions and perceptions gained from interviews. Figure 2 visualizes research process.

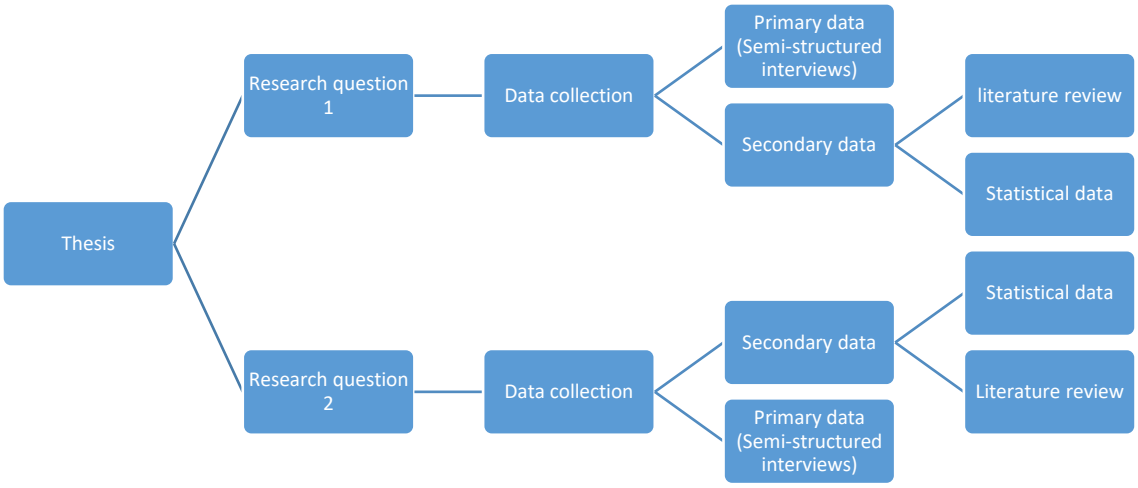


Figure 2 Visual representation of research process

3.3 Data analysis

The data collected from interviews was analyzed using a qualitative method called thematic analysis. This method helps to find patterns and key ideas from interview data. Thematic analysis is often used in qualitative research because it allows researchers to

sort data into different themes and sub-themes (Braun & Clarke, 2008, p. 79–81). This approach was chosen because it provides a clear way to organize the data, but it still allows flexibility in interpretation.

The analysis started by transcribing the recorded interviews word to word. Each interview was carefully written out to make sure the information was correct and to keep the meaning of what the participants said. The transcribes were then read several times to gain a good understanding of the topic and to identify key themes and ideas. The identified themes were compared with existing research to find connections between the study results and theories. This comparison helped to see if the findings matched, disagreed with, or added new insights to previous studies on AI in customer service.

In addition to analyzing the main data, statistical information from Tietoarkisto Aila was also reviewed. This numerical data helped support the findings by showing general trends and public opinions about AI use. The results were presented using pie chart and bar graph to highlight important patterns. The first question from Tietoarkisto Aila was: Technological development and digitalization (Including artificial intelligence) offer opportunities for exploitation, but they also involve security threats and opportunities for abuse. Are you concerned about these threats and opportunities for abuse? The answer options were: 1. Not at all, 2. Somewhat, 3. Very much and 4. I don’t know (Turvallisuuspolitiikka- ja maanpuolustustutkimus 2021). Another question was: What do you think about the following statement? Although robotics and artificial intelligence will initially reduce jobs, in the long run they will secure employment. The answer options were: 1. Totally agree, 2. Somewhat agree, 3. Hard to say, 3. Somewhat disagree, 4. Completely disagree (EVAn Arvo- ja asennetutkimus kevät 2022).

Along with the statistical data, a literature review was also done as part of the. Secondary data analysis. The literature review gave background information on how AI is used in business and customer service. It gave insights from previous research, theories, and case studies. This helped shape the study, find gaps in existing knowledge, and compare

the results with different cases. By reviewing the past studies, this research gained better understanding of how AI is applied in customer service and what factors affect its success. During the research, special care was taken to remain objective and base conclusions on on the data.

3.4 Ethical considerations

Ethical considerations are essential in research to ensure the protection of participants, the credibility of findings, and adherence to ethical research principles. In this thesis, ethical guidelines from the University of Vaasa and general academic research standards were followed to maintain the integrity and reliability of the research process. One of the primary ethical concerns was ensuring the anonymity and confidentiality of the interview participants. To protect their identities, all personal information was removed, and responses were anonymized in the final report. Participants were informed about the purpose of the study, how their data would be used, and their right to withdraw from the study at any time (Walliman, 2006).

Another important ethical aspect was ensuring the reliability and validity of the research. The study aimed to present findings objectively, avoiding bias of data. Additionally, the research followed data protection regulations, including the General Data Protection Regulation (GDPR), which applies to academic research with EU (European Union, n.d.). All data was securely stored, and access was limited to the researcher to prevent unauthorized use. By following these ethical guidelines, the research ensured that participants were treated with respect, the findings were credible, and the research met the academic and legal standards.

4 Findings

This section presents and analyses the interviews conducted and information obtained from them. The interview questions were based on literature and the answers obtained from them helped to answer the research questions. This section also examines secondary data, i.e. statistical data. This data provided a broader perspective for the research questions. The goal of this section is to compile the results of the research so that the research questions posed at the beginning of the thesis can be answered.

4.1 Interview results

The interview findings were analyzed using thematic analysis, and several important themes were identified. The main themes were:

- AI's role in customer service. Interviewees explained how AI tools help automate responses, make customer service more efficient, and offer faster support.
- Challenges in AI implementation. Interviewees mentioned problems like difficulties in integrating, lack of customer or employee trust, and the need for human supervision.
- Best practices for AI adoption. Successful AI use requires proper training, step-by-step implementation, and making sure AI solutions fit the company's goals.

For clarification, the key themes from the interviews are summarized in Table 4. These themes structured the interviews and their results.

Table 4 The key themes from the interviews

Theme	**Key insights**
AI's role in customer service	AI enhances efficiency and customer experience.

Theme	Key insights
Challenges in AI implementation	Integration issues, trust concerns, need for oversight.
Best practices for AI adoption	Gradual implementation, training, business alignment.

To better understand the findings, a comparative analysis was made. This analysis compared the interview results with previous research, different company strategies for AI adoption, and traditional customer service methods.

4.1.1 Theme 1. AI's role in customer service

AI plays a significant role in customer service today. Many companies have automated processes, automated responses, and other AI tools to handle frequently repeated tasks or inquiries. Automation is used to make customer service easier in many different fields and it has also brought freedom to customers. For example, with the help of automated responses or chatbots, customers can get information and answers at any time of the day, regardless of the day. In healthcare, on the other hand, the customer remains independent and does not have to call nurses to their home as often. From the perspective of a customer service employee or nurse, automation reduces the workload and gives more time to handle things that require more thought. AI and automation also reduce costs for businesses by reducing the workload on human customer service representatives and reducing the risk of human error.

Participant 1 stated: *"--it has had a really positive impact in general. Previously, it took me a lot of time to respond to messages from customers or followers… I started getting pretty much the same questions over and over again, I started thinking about whether I could somehow automate these responses, and yes, they could be automated."* Participant 1 also mentions: *"It's wonderful for an entrepreneur who don't have time to answer to all those messages, and I don't have to hire a new person… this free, fairly simple tool, I can take care of that so that I don't have to worry so much about answering them."*

This respond reflects that the entrepreneur has found the automated responses to be a huge relief in his daily life and he has now more time to take care of other business-related matters. The entrepreneur also couldn't afford to hire outside help, but now he got help for free with the social media app's own tool. However, AI cannot replace the personal interaction between two people. This also came up in the interview. Participant 1 mentioned: *"--if I respond to those messages myself, sometimes it happens that we start joking or sometimes the conversation turns to something completely different, which is of course really nice… An automatic response doesn't do that, so when you deal with someone in person, it's always more deeper conversation."*

Participant 2 answers: *"An automated medication dispenser has cut down on customer visits for those whose visits were mainly about checking if they took their meds. The dispenser reminds them to take their medicine, and the doses are already prepped, so we don't have to drop by just to remind them anymore."* Even though the automated medication dispenser works well for many customers, it's not a perfect fit for everyone. In some cases, the nurse might still need to visit the customer's home to check on the situation, despite the automation. Participant 2 tells also that *"Dispensers are pretty sensitive devices, and sometimes they can actually lead to more visits when they need fixing. Since the customers are often elderly, the device can feel scary to them. They might worry about breaking it or they think it's too expensive for them. And it cuts down on human interaction, which is a shame…* She also states that *"In the workplace, it's really important to carefully plan who gets one of these dispensers… for those who struggle a lot, like with memory issues, it doesn't work so well."*

Participant 3 answers: *"I've noticed that speed is key, basically, the faster we get answers and solutions to customers, the happier they are… we've got a chatbot in place to automate answers to common questions, and if needed, the bot can direct the customer to a real human for help."* Participant 3 also responds: "*--it's definitely made a difference by making things easier for human customer service reps… it takes a huge load off the staff. Plus, it's great that the bot can help customers even outside of regular working hours,*

like at night, so there isn't a big pile-up of messages after weekends or holidays. Customer service has definitely gotten faster too… Now those repetitive ones are mostly handled by the bot. So, when people do reach out, the cases are usually a bit different, which actually makes the job more interesting. That kind of tool really helps with employee satisfaction too."

Even though the company has had good experiences with the chatbot so far, Participant 3 still emphasizes that it's not replacing humans: *"I don't think AI tools or automation like this could ever fully replace a human… it's super important that customers can actually reach a real person if the bot doesn't know the answer."*

The response shows that automation has made the participants' daily work easier. Participants felt that automating repetitive customer service tasks allowed them to focus on more complex and meaningful tasks. Although participants say AI tools do not completely eliminate the need for a real person, they speed up repetitive tasks and lighten the workload of a real person.

4.1.2 Theme 2. Challenges in AI implementation

Although AI tools are powerful and their use is increasing, their implementation may still be challenging. The companies must have good equipment and good expertise to use these tools. There may be resistance from the company's employees or customers to using these tools. Employees may fear that they will lose their jobs because of them, and customers may have fears or prejudices against them. In addition, AI tools require monitoring. Their performance needs to be monitored and possibly adjusted from time to time. Although tools do not make human errors, they can make errors, for example, if the data is incorrect or if something in the tool breaks.

Participant 1 states: *"I haven't had any major challenges… they were already available on my social media channels."* He also mentions that he studies new things himself and searches for information through Google, for example: *"I've worked with them myself,*

so I found help on Google if I needed something… so I haven't had to spend a lot of time studying it." However, the entrepreneur emphasizes that he doesn't fully trust the tools functionality and monitors its functionality all the time: *"I don´t really trust the automated response automation completely… I monitor it all the time. It's pretty terrible for your public image if it starts to play tricks and doesn't work or responds in a funny way."*

One common concern about AI tools is whether they will completely replace humans. The Participant 1 does not believe this: *"--you have to tell the customer that the work will continue as it is, and that there will be no changes towards the customer… And I don't think that tools or anything like that could completely replace people in customer service or elsewhere. At least I wouldn't trust them for very long periods of time that there won't be errors…"*

Participant 2 tells: "*When these kind of devices hit the field, both nurses and customers need training so they can use them. When the device arrives at the customer's home, they'll also need a nurse's support at first…* This indicates that customers as well as nurses may have prejudices and fears towards the device. Its use must be justified, and its use must be taught and supported. Like Participant 2 also said: "*--some customers also worry that the device will be too expensive…"* Participant 2 also noted in the interview a one negative aspect which is specific to the nurse's work regarding the use of the device: *"One issue with medication dispensers is that even if the customer takes the meds… there is no guarantee that they actually swallow them. It would be great if the people developing these tools would spend some time working in home care… they would have a better understanding of these things."*

In customer service, whether in healthcare or other fields, it's often important for the customer to connect with a real person. This is also evident from Participant 2's response: *"I don't think it can fully replace a person… human connection is super important, and with these kind of gadgets, that naturally takes a hit."*

Participant 3 tells that chatbot doesn't always understand everything: *"Sometimes someone might as something in a language that the tool doesn't understand… it might not know what to do."* He also points out that during the integration phase, training and support for using the tool are essential: *"--the staff has been guided and trained on how to use it really well. There hasn't been any real resistance... the key is being open about it, talking about it, and doing proper training".*

Participant 3 also believes that chatbot alone isn't enough. Customer satisfaction requires a human customer service representative as well: *"--If the chatbot can't help or answer properly, or if the customer really wants to talk to a real person, the chat should transfer to a human… Just having a chatbot alone probably wouldn't be great for customer satisfaction."*

The answers revealed that while AI tools can improve customer service operations, their successful implementation includes several challenges. Participants had relatively few technical problems, but they felt that continuous monitoring and control were necessary to avoid mistakes that could harm a company's public image. Another major challenge was the fear and hesitation among both employees and customers. Employees had concerns about job security, and customers were in some cases sceptical about the technology. Proper training and clear communication were mentioned as critical steps in building trust and confidence in AI tools.

4.1.3 Theme 3. Best practises for AI adoption

AI tools should match the company's goals to make sure they bring real value. Bringing AI into a business takes time and planning to make it work well. It's important to understand how the company operates and what technologies it already uses to choose the best AI tools. Training employees and giving them support is key to making AI adoption successful. Companies should also set a clear goal, track AI's impact, and make sure it follows ethical guidelines and security rules. Encouraging a flexible and open-minded approach helps businesses use AI effectively and get the most out of it in the long run.

Participant 1 tells: *"What will come in the future, I think the use of these tools will certainly increase… It would be really good if those social media channels could have more of those different tools for creating content and then for commenting and discussing… That automation has kind of saved me and my private life so that I don't have to be there typing all the time."* Participant 1 also states that: *"If a new employee started here, I'd probably just show them step by step hoe things work… onboarding would definitely be needed."* Participant 1 has also designed the tools based on company's strategies. He tells: *"-- the most useful tools are the ones that help create content... the auto-reply feature is super effective too… They definitely make things easier and lower my stress levels. My followers seem to like them too…"*

Participant 2 agrees that the company needs to know which tools fit best for the company: *"These tools have a place in every industry, but you have to know who they're actually meant for… It would be wrong to assume that the same thing works equally well for everyone."* She also believes that continuous training is needed to ensure smooth use of the tool. However, this has not been the case in her workplace: *"Our training hasn't been great… the info has just been passed around between the employees, which isn't the best way to do it… It would be really important to have continuous training…"*

Participant 2 also has some ideas on how the implementation of this kind of automation could be improved: *"They should be introduced step by step with careful testing… There should also be some kind of way to measure how well it works…* For overall, she still believes that there is a need for these tools now and the future: *"The workload is so huge… Things like medication dispensers, remote contacts, and nutrition-related automation are only going to increase. Same with digital clinics."*

Participant 3 shares some thoughts on the ethical use of these tools: *"We don't share any personal or private information in the chat… so there's no ethical issue here."* He also believes that technology will continue to grow, and these kinds of tools will definitely be

beneficial for companies: *"--technology is growing, and AI and automation are definitely growing too."* He also mentions that: *"Automation in customer service is going to have a big impact... It makes things so much easier."*

AI tool adoption has also been a focus in Participant 3's company. Both employees and customers have been considered, and the reasons for using the tool have been explained to them: *"During the integration and implementation phase, it's really important to properly train employees… Everyone needs to be prepared and understand what it is and how they'll be using it. And maybe even for customers, a little explanation could be useful…"*

The interviews showed that careful planning and alignment with company goals are essential for the successful implementation of AI tools. Participants stated that AI solutions should fit the specific needs of the company and its customers. Understanding existing processes and selecting appropriate tools was seen as a key factor in achieving real benefits. A proper training was also seen as crucial step. Participants stated that employees need clear instructions and continuous support to use AI tools effectively. Insufficient training can reduce the benefits that AI tools offer. Important part in implementing AI tool is testing. That allows companies identify potential problems early. Monitoring AI performance and ensuring ethical use were also concerns.

Many similarities were found between the interviews. Table 5 presents the key points found in the interviews in a tabular format.

Table 5 Findings summary table

Theme	**AI's role in customer service**	**Challenges in AI implementation**	**Best practices for AI adoption**
Key insights	AI enhances efficiency and customer experience	Implementation challenges include integration issues,	Successful AI adoption requires gradual

Theme	AI's role in customer service	Challenges in AI implementation	Best practices for AI adoption
	by automating responses, reducing workload, and improving service availability.	trust concerns, need for oversight, training requirements, and potential resistance from employees or customers.	implementation, continuous training, business alignment, ethical considerations, and users trust.
Participant 1 insights	Uses Instagram's response automation to manage customer interactions efficiently. Saves time and reduces costs but knows that AI cannot replace personal interaction.	Faces minimal challenges as tools were already available on social media. Monitors AI closely to avoid errors. Does not believe AI will replace humans.	Suggests more integrated AI tools within social media apps. Believes AI will continue to grow. Highlights the need for training new employees to AI tools.
Participant 2 insights	Automated medication dispensers which are improving patient independence and reducing nurse visits but may not work for all patients. Some elderly users fear the technology.	Challenges include patient and nurse training, sensitivity of devices, lack of human interaction, and concerns about affordability. Some patients still require personal visits.	Believes AI tools should be carefully assigned to suitable users. Highlights need for continuous training. Suggests phased introduction with proper evaluation.

Theme	AI's role in customer service	Challenges in AI implementation	Best practices for AI adoption
Participant 3 insights	Retail company chatbot handles common queries, improving efficiency and reducing workload. Chatbot allows human interaction when needed.	Challenges include language limitations, need for staff training, and maintaining customer satisfaction.	Supports proper employee training before implementation. Highlights transparency and customer awareness. Believes AI will continue to grow in business.

4.2 Public attitudes towards AI

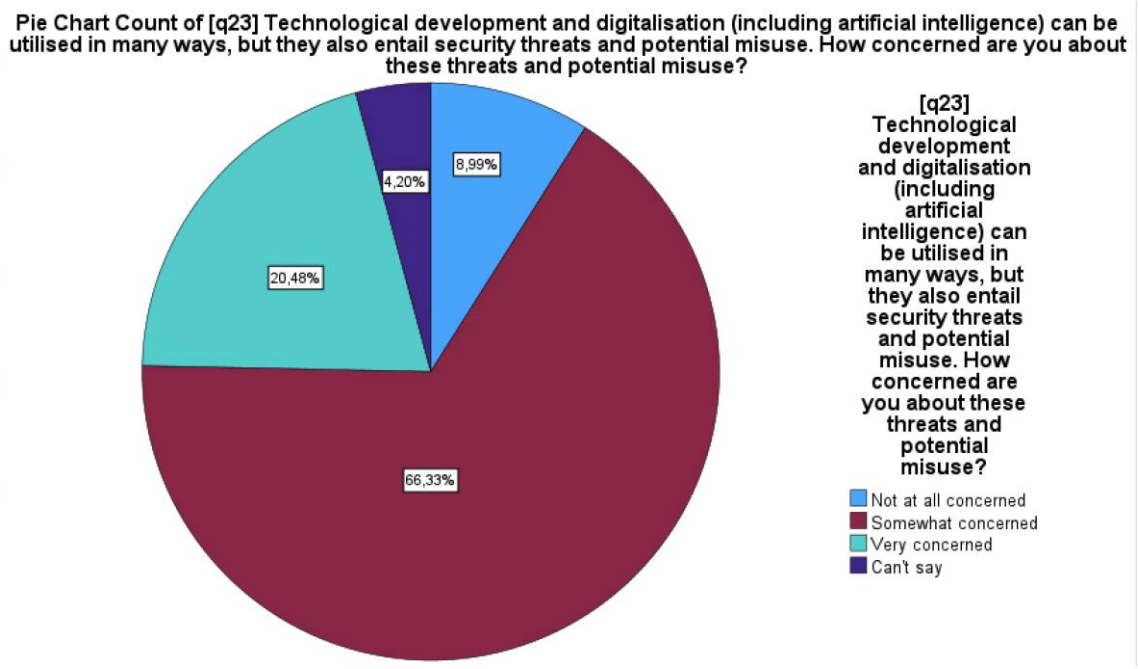
This section examines public attitudes towards AI and digitalization. It focuses on two key aspects: concerns about AI related security risks and AI's long-term impact on employment. The analysis is based on statistical data from two large-scale surveys conducted in Finland. The data has been received from Tilastokeskus Aila, and processed with SPSS software.

The first data is called: FSD3606 Security Policy and National Defence Survey 2021. It asked respondents are they concerned about security threats and potential misuse related to AI and digitalization. As the Picture 1 shows 66,33 % of respondents are somewhat concerned about AI-related security risks. 20,48 % are very concerned, and that indicates that a significant part of the people sees AI as a potential risk. 8,99 % are not at all concerned and 4,2 % were uncertain.

These results that most people recognize AI's security risks, but their level of concern differs. While AI improves efficiency and automation, many remain cautious about issues like data privacy, cybersecurity, and potential misuse by organizations or governments.

This aligns with literature findings, that highlights the importance of trust and transparency in AI adoption (Choi, 2020, 9–10).

The survey results support also with the interviews. Interview participants were more concerned about trust, oversight, and implementation than security risks. This shows that while businesses see AI as a useful tool, the public is more cautious about its bigger impact.

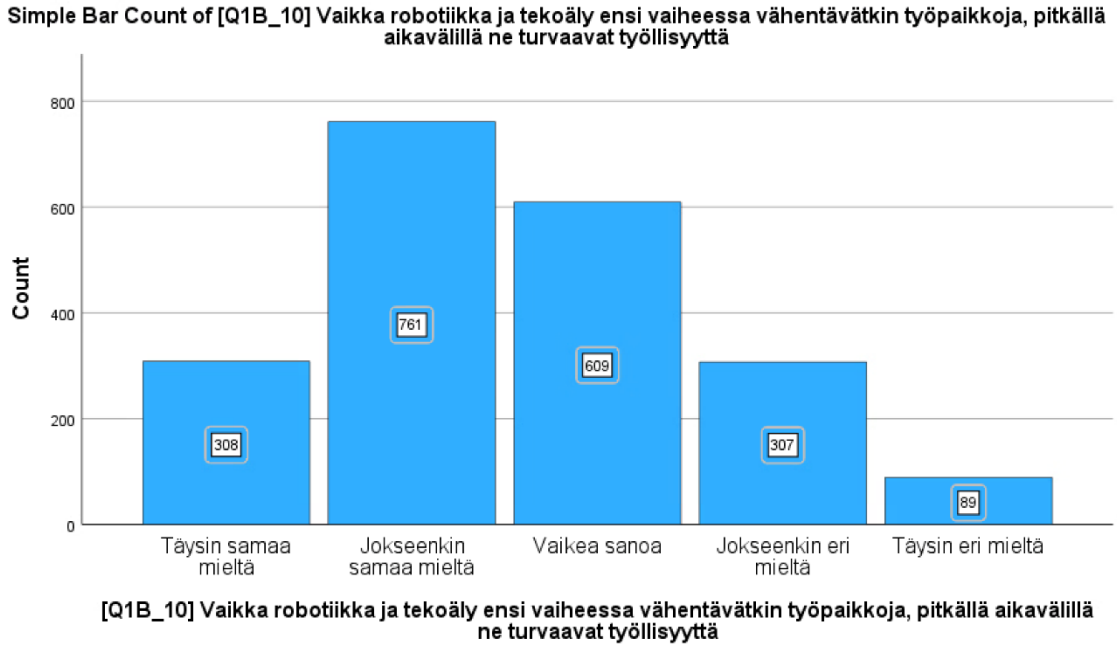


Picture 1 Security Policy and National Defence Survey 2021

The second data is called: FSD3731 EVA Value and Attitude Survey Spring 2022. It examined public opinions on the statement: *"Although robotics and AI may initially reduce jobs, in the long term, they will secure employment."* As the Picture 2 shows 36,7 % (308 fully agree, 761 somewhat agree) believe that AI will secure jobs. 29,4 % (609) were uncertain about AI's impact on employment. 19,1 % (307 somewhat disagree) and 4,3 % (89 fully disagree) believe that AI will not secure jobs in the long term.

The results show mixed opinions on AI's impact on jobs. Many believe AI will help in long-term, but a large number remain unsure or doubtful. The high percentage of uncertainty (29,4 %) tells that many people feel they don't have enough information to predict AI's effect on employment.

These results differ from the interviews where the participants saw AI as a tool to improve efficiency and reduce workload, but they didn't focus on its long-term impact on jobs. This could mean that businesses view AI mainly as a way to save costs and boost productivity, while its effect on economy and jobs is still unclear to public.



Picture 2 EVA Value and Attitude Survey Spring 2022

5 Discussion

The aim of this research was to understand how AI tools can help improve customer service and how companies can effectively implement them. The study included interviews and a literature review and identified key topics, including AI's role in customer service, challenges in using AI, the best ways to adopt AI, and public opinions on AI. This section discusses these findings and gives practical advice for companies which are planning to use AI.

5.1 Theoretical and practical implications

The findings of this thesis match literature about AI in customer service. Many studies show that AI improves efficiency (Perifanis & Kitsios, 2023, p. 2). It has also greatly improved customer service by handling simple questions and repetitive tasks. This allows human employees to focus on more complicated issues. This makes customer service more efficient and reduces waiting times (Inavolu, 2024, p. 8). Research also emphasizes the need for good planning and employee training when adopting AI (Perifanis & Kitsios, 2023, p. 18). This thesis supports these things but also notes that for AI to work best in business processes, it needs human oversight.

One interesting finding in this thesis was how different industries use AI. The research included interviews with people from social media, healthcare, and retail, giving a wide view of AI use. AI was helpful in all industries, but its purpose varied. In healthcare, it was used for automatic medication dispensing, while in retail, it was mainly used for customer service chatbot. This shows that AI should be adapted to fit the specific need of each industry (Ostrom et al., 2019, p. 84–97).

To successfully use AI in customer service, companies should follow a few important steps. These steps help ensure that AI improves efficiency and customers and employees feel comfortable with the changes. As the interviews revealed, one key step is gradual implementation. AI tools should be introduced slowly so that employees and customers

have time to adjust. Starting with small test projects, pilot projects, can help find and fix any problems before AI is used on a larger scale. This makes the transition smoother and reduces the risk of major issues.

Another important factor, which interview participants mentioned is employee training. Workers need to understand how to use AI tools properly so they can get the best results. Companies should provide regular training and support, so employees feel confident in using AI. Continuous learning helps employees adapt to new updates and improvements in AI technology. A hybrid approach to customer service is also recommended. AI can be used to handle simple and repetitive tasks, while human employees should take care of more complex issues. This approach improves efficiency without losing the personal touch that customers appreciate. AI should assist, not replace, human workers, which ensures better customer experience.

Literature also emphasizes that AI in customer service often lacks the empathy and personal connection that human agents provide. This can make interactions feel cold and robotic, which may reduce customer trust. Customers usually prefer personalized experiences where their emotions and specific needs are understood. However, AI systems still struggle to fully capture these human qualities, leading to a gap between what customers expect and what AI can deliver. While AI is good at handling simple and repetitive tasks, it has trouble dealing with more complex or detailed questions. These kinds of issues require a deeper understanding and context, which AI does not fully have. When facing complicated problems, customers may prefer speaking with human agent who can offer more complete and thoughtful solutions. This can affect customer satisfactions and raise concerns about how reliable AI-powered customer service really is (Inavolu, 2024, p. 18–19).

Companies should also focus on clear communication. It is important to explain to employees and customers how and why AI will be used. This can help reduce worries about job security and service quality. When employees understand that AI is a tool to support

their work, rather than replace them, they are more likely to accept it. Customers should also know what AI can and cannot do so they have realistic expectations.

Common concern, resistance from employees, can be addressed with proper management. People Are questioning if human roles still matter in a workplace with AI. Technological reflection is about considering both the benefits and risks of AI. These both things matter, and companies should learn how to manage them (Golgeci et al., 2024, p. 5–10). Training is often seen as learning to use AI, but it can also involve helping employees adapt when AI changes or takes over some of their tasks. Clear communication about the company's goal to use AI as a support tool, not a replacement, can help reduce employees' concerns (Perifanis & Kitsios, 2023, p. 18).

Finally, companies should take ethical considerations and compliance seriously. AI tools must follow data privacy laws, such as GDPR, to protect customer information. Companies should also ensure that AI is used fairly and that it does not create problems such as bias or discrimination. Trust is essential for AI adoption, and ethical guidelines will help maintain that trust.

The literature shows that when both users and AI have clear roles, and users are motivated and skilled, they are more likely to accept AI. However, privacy concerns make it harder for users to accept AI when roles are unclear, while trust in AI makes users more confident in their ability to use it. Privacy concerns and awareness of risks can make users less likely to use personalized services. However, the benefits of personalized services may be more important than privacy worries. Users feel less concerned about privacy risks when they trust the service provider. This means that privacy concerns paly a big role in AI acceptance. The privacy concerns only affect role clarity, which means that users worry more about how AI works and their role using it, rather than other factors (Choi, 2020, p. 9–10).

Trust is important part in how people see and use automation. Trust helps people feel more confident in how automation works and whether they can rely on it. Specifically, users who feel capable of using AI are more likely to trust and accept it. This means that trust is more about how people feel about AI, while privacy concerns relate more to how AI actually works (Choi, 2020, p. 9–10).

The use of AI is expected to increase in the future, and it will continue to automate processes, but it is not yet known for sure how and what extent its use will increase. So far AI seems similar to other groundbreaking technologies like printing, plumbing, air travel, and telephones. These innovations have brought many benefits, but also unintended consequences, often affecting disadvantaged groups the most. It is important to focus on reducing these negative effects. However, AI is different from the past technological advances. Perfecting printing, plumbing, air travel, or telephony would not challenge human dominance in the world. Advancing AI to its fullest potential, might (Russel & Norvig, 2021, p. 1073).

5.2 Answering the research questions

This research answer two research questions:

1. How can companies use AI tools in customer service operations effectively?
2. What factors impact the implementation and usage of AI tools in customer service operations?

The research gives clear answers to these questions. AI tools help customer service by handling simple tasks, providing faster responses, and personalizing interactions. However, their success depends on choosing the right tools, using them correctly, and regularly checking their performance. To successfully implement AI tool, companies need a clear plan, train employees well, explain AI's role clearly, and combine AI with human customer service.

A key finding of the study is that AI tools can make customer service more efficient and lower costs, but they cannot fully replace human employees. People are still needed to handle complex issues, build customer trust, and provide empathy. Research also supports that AI should assist humans rather than replace them (Huang & Rust, 2018, p. 161). The study also found that using AI in customer service has challenges. These include problems with integration, lack of trust from employees and customers, ethical concerns, and following rules and regulations. To overcome these challenges, companies need a clear plan that considers both technology and people.

The literature review showed how AI can automate repetitive tasks, improve response times, and allow human employees to focus on more complex problems. The findings from the interviews confirmed these points by showing that participants successfully used AI tools like chatbots, automated replies, and medication dispensers to reduce workload and improve service availability. The results also show that effective AI usage requires careful planning, gradual implementation, continuous employee training, and the combination of AI with human interaction. The findings and discussion align with the existing theories, and support the idea that AI enhances efficiency but cannot replace the humans in customer service.

The literature review also took into account the potential obstacles to AI implementation, including employee resistance, lack of trust, ethical concerns, and integration difficulties. These theoretical challenges were clearly noted in the interviews. Interview participants reported concerns about trust, the need for human oversight, the importance of proper training, and the need of gradual adoption. Successful implementation requires clear communication about AI's role, employee support through training, ethical considerations, and ongoing monitoring of AI performance. The research findings and discussion strongly relate to the literature review.

5.3 Limitations and future research

This research gives useful insights into AI in customer service, but it has some limitations. First, the research includes only a small number of interviews, so it may not fully reflect the experiences of all industries and companies. A larger number of interviews could give a better overall picture of how AI is used. Second, this research focuses mostly on AI in customer service, so it does not look closely at other areas like marketing or logistics. Future research could explore more carefully, how AI affects in different parts of a business. Third, AI technology is always changing, and new improvements might affect how companies use AI in customer service. This research looks at the current situation, but the future research is needed to follow AI developments. Lastly, this research looks at AI use from a business point of view, but it does not deeply explore how customers feel about AI. Future research could focus more on customer satisfaction and trust in AI tools.

This research gives helpful information about how AI is used in customer service, but more research is needed. As AI improves, it is important to learn about its long-term effects, how it can support different languages, and how to make sure it is used fairly and ethically. One important topic for future research is how AI affects customer service in the long-term. AI is helping businesses serve customers better and work more efficiently, but its long-term effects are still unknown. Future studies should explore how AI impact customer satisfaction and changes employee' jobs. This would help businesses see if AI remains useful over time.

Another important topic is AI in customer service for different languages. As businesses grow internationally, AI needs to understand and respond to customers in many languages. Future research should study how well AI handles multilingual communication and how companies can improve AI tools to better serve customers from different language backgrounds.

Finally, it is important to study how AI can be used fairly. AI can sometimes be biased or make unfair decisions. More research is needed to help businesses prevent this and

make sure AI treats all customers equally. This would help build trust and make AI-based customer service more reliable.

6 Conclusion

This thesis explored how AI tools can improve customer service and how companies can successfully implement them. The findings showed that AI can automate simple tasks, speed up response times, and provide personalized service, but it cannot fully replace human employees. AI works best when used with human workers, which ensures that complex issues and customer trust are properly handled. The research achieved its goals by answering the research questions. It provided insights into how AI can be used effectively in customer service and what challenges companies may face. The study also highlighted best practices for AI adoption, such as gradual implementation, proper training, and clear communication.

Overall, AI has a great potential to enhance customer service when it is implemented correctly. Businesses that balance AI automation with human interaction, follow ethical guidelines, and keep improving their AI strategies will benefit the most from these tools.

References

Abdulsalam, T. A. & Tajudeen, R. B. (2024, September 30). Artificial intelligence (AI) in the banking industry: A review of service areas and customer service journeys in developing economies. *Business and management compass,* 68, 19–43. https://doi.org/10.56065/9hfvrq20

Adam, M., Wessel, M. & Benlian A. (2020, March 17). AI-based chatbots in customer service and their effects on user compliance. *Electronic Markets*. *The International Journal on Networked Business*, 31, 427–445. https://doi.org/10.1007/s12525-020-00414-7

Amazon. (n.d.). Alexa features. *Echo & Alexa.* Retrieved January 27, 2025, from https://www.amazon.com/b?node=21576558011&ref_=alxcom_lrn-more_btn_23

Balasubramaniam, N., Kauppinen, M., Rannisto, A., Hiekkanen, K. & Kujala, S. (2023, March 8). Transparency and explainability of AI systems: From ethical guidelines to requirements. *Information and Software Technology.* https://doi.org/10.1016/j.infsof.2023.107197

Bank of America. (n.d.). *Virtual assistant Erica: A case study in AI-driven banking.* Retrieved January 28, 2025, from https://promotions.bankofamerica.com/digital-banking/mobilebanking/erica

Basole, R. C., Park, H. & Seuss, C.D. (2023, November 26). Complex business ecosystem intelligence using AI-powered visual analytics. *Decision Support Systems* 2024-03, 178, 114133. https://doi.org/10.1016/j.dss.2023.114133

Braun, V. & Clarke V. (2008, July 21). Using thematic analysis in psychology. *Qualitative research in psychology.* https://doi.org/10.1191/1478088706qp063oa

Bieger, J., Goertzel, B. & Potapov, A. (2015, July 22–25). Artificial General Intelligence. *Springer International Publishing 2015*. https://doi.org/10.1007/978-3-319-21365-1

Boost.ai. (2024, November 12). *How DNB automated 20 % of all customer service traffic with a chat-first strategy.* Retrieved February 24, 2025, from https://boost.ai/case-studies/ai-chatbot-banking/

Bulusu, A. & Abellera R. (2021). AI meets BI : artificial intelligence and business intelligence. *CRC Press.* https://ebookcentral-proquest-com.proxy.uwasa.fi/lib/tritonia-ebooks/detail.action?docID=6313515

Buwah, N. N. (2024, June 11). Comparative Analysis of Customer Service Strategies, Challenges and Strives towards Customer Satisfaction: MTN Nigeria and MTN Camaroon Experience. *Open Journal of Business and Management,* 12. https://doi.org/10.4236/ojbm.2024.124109

Cao, Z., Li, M. & Pavlou, P. A. (2024, August 25). AI in Business Research. *Decision Sciences Journal, Forthcoming.* https://dx.doi.org/10.2139/ssrn.4897619

Choi, Y. (2023, January). A Study of Customer Acceptance of Artificial Intelligence technology. *International Journal of E-business research.* http://dx.doi.org/10.4018/IJEBR.323796

Choi, Y. (2020, December 1). A Study of employee acceptance of artificial intelligence technology. *European Journal of Management and Business Economics.* https://doi.org/10.1108/EJMBE-06-2020-0158

Creswell, J. W. (2023). Research Design: Qualitative, Quantative, and Mixed Methods Approaches (Fifth Edition). *SAGE Publications.* https://elevate.talis.com/uwasa/player/modules/63bc044df62dbb7585d7e107/epubs/645c055e00e2e710d6331c5e?chapter=13&anchor=s9781506386720.i603

Darlington Arinze, E. (2024, August). Artificial General Intelligence (AI) in Customer Service: Revolutionising Support and Engagement. *IAA Journal of Scientific Research* 11(2):33-39 https://doi.org/10.59298/IAAJSR/2024/112.3339

Elinkeinoelämän valtuuskunta (EVA): EVA:n Arvo- ja asennetutkimus kevät 2022 [data]. Dataversio 1.0 (2023-01-02). Yhteiskuntatieteellinen tietoarkisto [jakaja]. DOI: https://doi.org/10.60686/t-fsd3731

European Union (n.d.). *Data protection under GDPR – Your Europe.* Retrieved March 1, 2025, from https://europa.eu/youreurope/business/dealing-with-customers/data-protection/data-protection-gdpr/index_en.htm

Focus Answering Service. (2024, December 10.). *What Is The Problem With Automated Customer Service.egatrends 2023.* Retrieved February 19, 2025, from https://focustele.com/blog/what-is-the-problem-with-automated-customer-service/

Fountaine, T. McCarthy, B. & Saleh, T. (2021). Building the AI-Powered Organization. *Harward Business Review,* Summer2021 Special issue. https://research-ebsco-com.proxy.uwasa.fi/c/slwlh3/search/details/r4vs53adlb?db=bsu&limiters=None&q=building the AI-Powered Organization

Ge-Stadnyk, J., Alonso-Vasquez, M. & Gretzel, U. (2017, September). Sentiment Analysis: A Review. *ResearchGate.* https://www.researchgate.net/publication/319928524_Sentiment_Analysis_A_Review

Golgeci, I., Ritala, P., Arslan, A., NcKenna, B. & Ali, I. (2024, December 30). Confronting and alleviating AI resistance in the workplace: An integrative review and a process framework. *Elsevier inc.* https://doi.org/10.1016/j.hrmr.2024.101075

Google. (n.d.). *Discover what Google Assistant is. Hey Google.* Retrieved January 27, 2025, from https://assistant.google.com/

Huang, M.-H. & Rust, R. T. (2018, February 5). Artificial Intelligence in Service. *Journal of Service Research,* 21, 155-262. https://doi.org/10.1177/1094670517752459

Inavolu, S. M. (2024, June). Exploring AI-Driven Customer Service: Evolution, Architectures, Opportunities, Challenges and Future Directions. *ResearchGate.* http://dx.doi.org/10.13140/RG.2.2.19937.31841

Jalal, T. (2018). Machine Learning solutions. Pact Publishing. https://ebookcentral-proquest-com.proxy.uwasa.fi/lib/tritonia-ebooks/detail.action?docID=5379696

Jordan, M. J. & Mitchell, T. M. (2015, July 17). Machine learning: trends, perspectives, and prospects. *Siencemag.org,* 349. https://www.cs.cmu.edu/~tom/pubs/Science-ML-2015.pdf

Jung, A. (2022). Machine Learning. Springer. https://ebookcentral-proquest-com.proxy.uwasa.fi/lib/tritonia-ebooks/detail.action?docID=6869311

Kitchens, B., Dobolyi, D.G. & Abbasi, A. (2018, April). Advanced Customer Analytics: Strategic Value Through Integration of Relationship-Oriented Big Data. *Journal of*

Management Information Systems. https://doi.org/10.1080/07421222.2018.1451957

Lan, C, Sumantra, S., Balasubramaniam, R., Kannan, M. & Eun Hee, P. (2024, March 5). Shift of ambidexterity modes: An empirical investigation of the impact of artificial intelligence in customer service. *International journal of information management* 2024-06, 76, 102773. https://doi.org/10.1016/j.ijinfomgt.2024.102773

Lin, C.-C., Huang, A. Y. Q. & Yang, S. J. H. (2023, February 22). A Review of AI-Driven Conversational Chatbots Implementation Methodologies and Challenges. *Sustainability* 2023-03, Vol.15, p.4012. https://doi.org/ 10.3390/su15054012

Luo, J. M., Vu, H. Q., Li, G. & Law, R. (2021, July 12). Understanding service attributes of robot hotels: A sentiment analysis of customer online reviews. *International Journal of Hospitality Management* 2021-09, Vol. 98, p.103032, Article 103032. https://doi.org/10.1016/j.ijhm.2021.103032

Maanpuolustustiedotuksen suunnittelukunta (MTS): Turvallisuuspolitiikka- ja maanpuolustustutkimus 2021 [data]. Dataversio 1.0 (2022-02-07). Yhteiskuntateteellinen tietoarkisto [jakaja]. DOI: https://doi.org/10.60686/t-fsd3606

Maisel, L., Sorensen, J., H., & Zwerling, R. J. (2022). AI-enabled analytics for business : a roadmap for becoming an analytics powerhouse. Hoboken, New Jersey : Wiley. https://ebookcentral-proquest-com.proxy.uwasa.fi/lib/tritonia-ebooks/detail.action?docID=6850563

Manyika, J. & Bughin, J. (2018, October 5). The promise and challenge of the age of artificial intelligence. *Mckinsey Global Institute.* https://www.mckinsey.com/featured-insights/artificial-intelligence/the-promise-and-challenge-of-the-age-of-artificial-intelligence

McKim, C. A. (2017, April). The Value of Mixed Methods Research: A Mixed Methods Study. *Journal of Mixed Methods Research,* 11. https://doi-org.proxy.uwasa.fi/10.1177/1558689815607096

McKinsey & Company. (2018, November 13). *AI adoption advances, but foundational barriers remain.* Retrieved January 28, 2025, from

https://www.mckinsey.com/featured-insights/artificial-intelligence/ai-adoption-advances-but-foundational-barriers-remain - /

Midlands Technical College. (2022, January 6.). *The true Cost of Poor Customer Service to Your Business.* Retrieved February 23, 2025, from https://www.midland-stech.edu/news/true-cost-poor-customer-service-your-business

Nice. (2025). *What is Predictive Analytics for Customer Support?* Retrieved February 19, 2025, from https://www.nice.com/glossary/predictive-analytics-for-customer-support

Omeish, F. Al Khasawneh, M. & Khair N. (2024, August 3). Investigating the impact of AI on improving customer experience through social media marketing: An analysis of Jordanian Millenials. *Computers in Human Behaviour Reports,*m15, 2. https://doi.org/10.1016/j.chbr.2024.100464

Ostrom, A.L., Fotheringham, D & Bitner M. J. (2019, May). Customer Acceptance of AI in Service Encounters: Understanding Antecedents and Consequences. *Handbook of Service Science, Vol II.* https://doi.org/10.1007/978-3-319-98512-1_5

Patton, M. Q. (2014). Qualitative Research & Evaluation Methods : Integrating Theory and Practice. *SAGE Publications.* https://elevate.talis.com/uwasa/player/modules/63bc044df62dbb7585d7e107/epubs/645c04f7f74a4f1a2473c60d?chapter=6

Perifanis, N-A. & Kitsios, F. (2023, February 2). Investigating the Influence of Artificial Intelligence on Business Value in the Digital Era of Strategy: A Literature Review. *Information (Basel),* 14 (2), 85. https://doi.org/10.3390/info14020085

Priest, M. (2024, April 22). Boost.ai. *5 examples of AI in customer service.* Retrieved January 30, 2025, from https://boost.ai/blog/examples-of-ai-in-customer-service/?utm_source=chatgpt.com

Raghunathan, N. & Kandasamy, S. (2017). Challenges and Issues in Sentiment Analysis: A Comprehensive Survey. *School of Computer Science and Engineering, Vellore Institute of Technology.* https://doi.org/10.1109/ACCESS.2023.3293041

Rane, N. L., Choudhary, S. P. & Rane, J. (2024, October 10). Acceptance of artificial intelligence: key factors, challenges, and implementation strategies. *Journal of*

Applied Artificial Intelligence, 5 Issue 2: 50-70. https://doi.org/10.48185/jaai.v5i2.1053

Robson, B. (2024, April 3). WDD Malaysia. *Inside Uniqlo's Digital Strategies: Outmaneuving Fast Fashion Rival.* Retrieved January 30, 2025, from https://wdd.my/blog/uniqlo-digital-strategies-fast-fashion-outmaneuvering/?utm_source=chatgpt.com

RTS labs (2024, November 26). *Aligning AI Initiatives with Business Objectives.* Retrieved February 23, 2025, from https://rtslabs.com/aligning-ai-initiatives-with-business-objectives

Ruslin, R., Mashuri, S., Sarib, M., Alhabsyi, F. & Syam, H. (2022, February) Semi-structured Interview: A Methodological Reflection on the Development of a Qualitate Research Instrument in Educational Studies. *ResearchGate.* https://www.researchgate.net/publication/358893176_Semi-structured_Interview_A_Methodological_Reflection_on_the_Development_of_a_Qualitative_Research_Instrument_in_Educational_Studies

Russell, S. & Norvig P. (2021). Artificial Intelligence: A Modern Approach, Global Edition. Pearson Education. https://bookshelf.vitalsource.com/reader/books/9781292410074/epubcfi/6/24[%3Bvnd.vst.idref=Chapter01-02]!/4

Rust, R. T. & Huang, M.-H. (2012, March). Optimizing Service Productivity. *Journal of Marketing,* 76, 47–66. https://doi-org.proxy.uwasa.fi/10.1509/jm.10.0441

Saka, A. B., Oydele, L. A. A., Ganiyu, S. A., Chan, D. W. M. & Bello, S. A. (2023, January 3). Conversational artificial intelligence in the AEC industry: A review of present status, challenges and opportunities. *Advanced Engineering Informatics.* 55. https://doi.org/10.1016/j.aei.2022.101869

Saunders, M. N. K. & Thornhill, P. L. (2023). Research Methods for Business Students. Pearson Education. https://bookshelf.vitalsource.com/reader/books/9781292402741/epubcfi/6/2[%3Bvnd.vst.idref=Cover]!/4/2/2/2%4050:40

Service (2025). *What is automated Customer Service.* Retrieved January 30, 2025, from https://www.salesforce.com/eu/service/customer-service-automation/what-is-automated-customer-service/

Sitra. (n.d.). *Megatrends 2023 update: Understanding an era of surprises.* Retrieved January 27, 2025, from https://www.sitra.fi/en/topics/megatrends/ - megatrends-2023-update-understanding-an-era-of-surprises

Snyder, H. (2019, August 1). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research,* 104. https://doi.org/10.1016/j.jbusres.2019.07.039

Teneo.ai. (2025). *Revolutionizing Healthcare With Voice AI Chatbot: Use Cases and Benefits.* Retrieved February 24, 2025, from https://www.teneo.ai/blog/revolutionizing-healthcare-with-voice-ai-chatbot-use-cases-and-benefits

T_HQ technology and business. (2024, October 1.). *How to choose the right AI tool for your business needs.* Retrieved February 20, 2025, from https://techhq.com/2024/10/how-to-choose-the-right-ai-tool-for-your-business-needs/

UNESCO. (2024). *Ethics of Artificial Intelligence.* Retrieved February 25, 2025, from https://www.unesco.org/en/artificial-intelligence/recommendation-ethics

Uniqlo (n.d.). *Your Virtual Shopping Assistant.* Retrieved February 24, 2025, from https://www.uniqlo.com/us/en/special-feature/iq

Uzoka, A., Cadet, E. & Ugochukwu Ojukwu, P. (2024, October 24). Leveraging AI-powered chatbots to enhance customer service efficiency and future opportunities in automated support. Computer Science & IT Research Journal, 5. http://dx.doi.org/10.51594/csitrj.v5i10.1676

Vial, G., Cameron, A.-F., Giannelia, T. & Jiang, J. (2023, May). Managing artificial intelligence projects: Key insights from an AI consulting firm. *Information Systems Journal,* 33. https://doi.org/10.1111/isj.12420

Walliman, N. S. R. (2006). Social Research Methods. *SAGE Publications.* https://doi.org/10.4135/9781849209939.n12

Woodside, A. G. (2016). Case Study Research. *Emerald Publishing Limited 2016.* https://www-emerald-com.proxy.uwasa.fi/insight/publication/doi/10.1108/9781785604607

Xu, Y., Shieh, C.-H., van Esch, P. & Ling Ling, I. (2020, March 17). AI customer service: Task complexity, problem-solving ability, and usage intention. *Australian Marketing Journal.* https://doi.org/10.1016/j.ausmj.2020.03.005

Zendesk (2025). *What is automated Customer Service? A complete quide.* Retrieved January 30, 2025, from https://www.zendesk.com/service/ticketing-system/automated-customer-support/

Ångström, R. C., Björn, M., Dahlander, L., Mähring, M. & Wallin, M. W. (2023, August 30). Getting AI Implementation right: Insights from a Global Survey. California *Management Review,* 66, 5–148. https://doi.org/10.1177/00081256231190430

10xds (2025). *M5 common Challenges in Implementing Artificial Intelligence (AI).* Retrieved February 20, 2025, from https://10xds.com/blog/challenges-implementing-artificial-intelligence/

Appendices

Appendix 1. Interview Questions

Background Information

1. Could you briefly introduce yourself and your role in the company?
2. How long have you been working in customer service and what kind of changes have you seen in customer service processes in this time?
3. Does your company currently use AI tools in customer service? If yes, which ones? If not, why not?

AI in customer service processes

4. In what ways do you think AI has influenced customer service processes in your company?
5. Which parts of customer service have improved the most with AI?
6. Have you faced any challenges or limits when using AI in customer service?

Effectiveness of AI in customer service

7. How does AI-assisted customer service compare to traditional human service in efficiency, customer satisfaction, and experience?
8. Based on your experience, what are the most effective AI tools for customer service, and why?
9. Have you noticed any changes in customer behaviour or expectations since AI was introduced in customer service?

Managing AI implementation

10. How did your company manage the process of implementing AI to customer service?
11. What were the biggest challenges during the implementation phase, and how were they addressed?

12. How were the employees trained to work with AI tools, and how did they react to these changes?
13. What kind of leadership strategies are needed to successfully integrate AI in customer service?

Human and ethical considerations

14. How do customers feel about AI in customer service? Have you noticed any concerns or resistance?
15. Do you think AI can fully replace human agents in customer service, or is a human touch always needed?
16. Have you faced any ethical issues with AI in customer service at your company?

Future of AI in customer service

17. How do you see the future of AI in customer service evolving in the next 5-10 years?
18. Are there any new AI trends or technologies that will impact customer service?
19. What improvements or innovations would you like to see in AI tools for customer service?

Closing questions

20. Is there anything else you would like to add regarding AI's role in customer service?
21. Do you have any advice for companies which are planning to use AI in customer service?

Appendix 2. Acknowledgement of generative AI use

Tool used: ChatGPT (version GPT-4)

Developer: OpenAI

URL: https://chat.openai.com/

Date of use: November 2024 – April 2025

Reference found using ChatGPT:

Robson, B. (2024, April 3). WDD Malaysia. *Inside Uniqlo's Digital Strategies: Outmaneuving Fast Fashion Rival.* Retrieved January 30, 2025, from https://wdd.my/blog/uniqlo-digital-strategies-fast-fashion-outmaneuvering/?utm_source=chatgpt.com

I used ChatGPT (version GPT-4, OpenAI, https://chat.openai.com) during the thesis writing process to assist in searching for relevant online information. I carefully evaluated all search results and their reliability.

Prompts used (examples):

"Find companies that are successfully using artificial intelligence in customer service."

"List recent challenges companies face when they are implementing AI in customer service with link."

"Help me find academic articles that discuss the use of AI in a company's customer service."

I analyzed the result from ChatGPT and used the results also as inspiration when I was searching for materials in the University library, for example by taking search terms and names of authors from them.