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AI IN CUSTOMER SERVICE

Opportunities and Challenges

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ABSTRACT

Joona Tuomioja: AI in Customer Service: Opportunities and Challenges
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Artificial Intelligence has become an integral part of everyday life in recent years, and organizations are increasingly leveraging this technology to enhance their operations. A primary field for this integration is customer service, which has already been undergoing a digital transformation aimed at improving customer interactions and operational efficiency. Many companies have utilized chatbots and virtual voice assistants in their services. However, despite the promising capabilities of AI, a significant challenge has emerged: a gap between the technology's potential and the actual experiences of users. This study aims to address the issue by exploring consumer perceptions, offering a comprehensive understanding of how AI is currently shaping customer service interactions.

The study was guided by research questions focused on identifying the benefits and challenges of AI in customer service, and on comparing consumer perceptions of AI-driven versus human interactions. The research was conducted as a qualitative study, combining a literature review with an empirical consumer survey. Data was collected via an online qualitative survey of 24 participants with experience using AI-powered customer service tools. The responses were systematically analysed using thematic analysis to identify key themes related to consumer expectations, frustrations, and preferences.

The results of the study indicate that the primary benefits of AI are its speed and 24/7 availability for simple inquiries. However, significant challenges remain, including AI's limited ability to handle complex issues, a lack of perceived empathy, and frequent miscommunications. Findings also show a strong consumer preference for transparency and for an easy option to transfer to a human agent. Consumers perceive a clear trade-off: AI is valued for efficiency in transactional tasks, while human interaction is preferred for its emotional intelligence and problem-solving capabilities in more complex situations. The thesis concluded that balanced approach where AI complements rather than completely replaces human agents is essential for successful integration of AI in customer service.

Keywords: artificial intelligence, customer service, chatbot, GenAI

TIIVISTELMÄ

Joona Tuomioja: Tekoäly Asiakaspalvelussa: Mahdollisuudet ja Haasteet
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Tekoälystä on viime vuosina tullut osa jokapäiväistä elämää, ja organisaatiot hyödyntävät tätä teknologiaa yhä enemmän tehostaakseen toimintaansa. Yksi keskeinen tekoälyn integraation alue on asiakaspalvelu, jossa monet yritykset hyödyntävät nykyään chatbotteja ja virtuaalisia ääniavustajia. Tekoälyn lupaavista mahdollisuuksista huolimatta on kuitenkin noussut esiin merkittävä haaste: kuilu teknologian potentiaalin ja käyttäjien todellisten kokemusten välillä. Tämän tutkimuksen tavoitteena on käsitellä tätä ongelmaa tutkimalla kuluttajien näkemyksiä ja tarjota kattava ymmärrys siitä, miten tekoäly tällä hetkellä muokkaa asiakaspalvelun vuoro-vaikutustilanteita.

Tutkimusta ohjasivat tutkimuskysymykset, jotka keskittyivät tunnistamaan tekoälyn hyötyjä ja haasteita asiakaspalvelussa sekä vertailemaan kuluttajien näkemyksiä tekoälypohjaisesta ja ihmisen tarjoamasta palvelusta. Tutkimus toteutettiin laadullisena tutkimuksena, jossa yhdistettiin kirjallisuuskatsaus ja empiirinen kuluttajakysely. Aineisto kerättiin laadullisella verkkokyselyllä 24 osallistujalta, joilla oli kokemusta tekoälypohjaisten asiakaspalvelutyökalujen käytöstä. Vastaukset analysoitiin systemaattisesti teema-analyysia käyttäen, jotta voitiin tunnistaa keskeisiä teemoja liittyen kuluttajien odotuksiin, turhautumisiin ja mieltymyksiin.

Tutkimuksen tulokset osoittavat, että tekoälyn ensisijaiset hyödyt ovat sen nopeus ja saatavuus vuorokauden ympäri yksinkertaisissa kyselyissä. Merkittäviä haasteita on kuitenkin esimerkiksi tekoälyn rajallinen kyky käsitellä monimutkaisia asioita, koetun empatian puute ja toistuvat väärinymmärrykset. Tulokset osoittavat myös kuluttajien vahvan mieltymyksen läpinäkyvyyteen sekä helppoon mahdollisuuteen siirtyä ihmisagentin palveltavaksi. Kuluttajat kokevat selvän kompromissin: tekoälyä arvostetaan tehokkuudesta transaktioluonteisissa tehtävissä, kun taas ihmisen kanssa asiointia suositaan emotionaalisen älykkyyden ja ongelmanratkaisukyvyn vuoksi monimutkaisemmissa tilanteissa. Tasapainoinen lähestymistapa, jossa tekoäly täydentää ihmisagentteja eikä korvaa heitä kokonaan, on olennainen tekoälyn onnistuneelle integroinnille asiakaspalveluun.

Avainsanat: tekoäly, asiakaspalvelu, chatbot

USE OF AI IN THESIS

I have utilised AI tools in my thesis:

☐ No
☒ Yes

The AI tools utilised in my thesis and their purposes are described below:

Names and versions of AI tools: ChatGPT-4o, Gemini 2.5 Pro

Purpose of using AI tools: Used for planning the original idea for the thesis and its scope. Used also for spellchecking and refining sentence structures

Sections where AI tools were used: Structure for the thesis, brainstorming ideas for the thesis, sentence structures throughout the thesis.

I acknowledge that I am fully responsible for the entire content of my thesis, including the parts generated by AI, and accept accountability for any violations of ethical standards in publications.

PREFACE

It has now been almost five years since I started my studies at Tampere University in Knowledge and Information Management. Years have gone by quickly, and it feels great to be finally able to get my studies and thesis done. This spring and summer was quite hectic as I juggled my full-time job and thesis writing, but in some ways, they provided a balance to one another.

I would like to express my sincere gratitude to my thesis supervisor, Nannan Xi, for her continuous support throughout this process. Her guidance in facilitating the research and valuable feedback were important to the completion of this thesis. I also wish to thank Gigantti Oy and Tony Nikkilä for their support. Additionally, I extend my thanks to all the participants who took the time to respond to the survey. Their input provided important insights into consumer mindsets, expectations, and concerns regarding the use of AI in customer service. Lastly, I want to thank my friends, family and colleagues who supported me throughout this thesis and the whole 5-year journey.

Tampere, 5.8.2025

Joona Tuomioja

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LIST OF SYMBOLS AND ABBREVIATIONS

AI	Artificial Intelligence
ChatGPT	Chat Generative Pre-Trained Transformer
DL	Deep Learning
GenAI	Generative Artificial Intelligence
Industry 4.0	Fourth phase of industrial revolution
IoT	Internet of Things
IVR	Interactive voice response
LLM	Large Language Model
ML	Machine Learning
NPS	Net Promoter Score
SLA	Service Level Agreement

1. INTRODUCTION

1.1 Motivation

1.1.1 Practical need

The idea for this thesis originated from discussions with employees of the case organization regarding the use of AI across various departments, which eventually focused on its application in customer service. One factor that also influenced the decision to focus on AI was my own interest in the topic. The rapid advancement of Artificial Intelligence (AI) has made organizations ponder the possibilities it offers. AI has become crucial to promoting service innovation (Chen and Hu, 2022) and importance of robots in service industry is becoming clear as marker growth predictions anticipate increase from 16.2 billion dollars in 2022 to 62.35 billion dollars by 2030 (Fortune Business Insights, 2023).

The evolution of customer service has been significantly influenced by the integration of digital technologies, which has transformed both operational and cultural aspects within organizations. Digital customer service is recognized for its ability to enhance customer interactions by facilitating service on various screens, including phones and chat platforms. This shift has resulted in improved customer satisfaction and reduced service costs, even those with long-standing legacy systems. (Delisi and Michaeli, 2021) Digital transformation has compelled organizations to re-evaluate how they deliver services. Advancements in digital technologies have given rise to new business models that allow companies to generate value in novel ways, altering customer experience. (Zaki, 2019) However, the shift towards digital customer services is not without its challenges. Organizations face difficulties in modernizing strategies to accommodate complexities introduced by new technologies. Issues such as privacy and data management are critical concerns that must be addressed during the digital transformation process. (Eren, 2021) While digital technologies have significantly enhanced customer service capabilities, they also introduce many challenges that organizations must navigate to ensure successful customer engagement and service delivery. As digital transformation reshapes customer service, AI emerges as a key part of this change. The growing integration of AI tools into digital service platforms offers new ways to optimize both customer experience and internal operations.

AI technologies are increasingly integrated into daily life, work, education, and business, bringing both benefits and challenges. It is believed to enhance productivity through automation and the streamlining of workflows across multiple sectors. AI applications can assist in data analysis, strategic decision-making, and managing operations. (Gupta and Singh, 2024) AI has the potential to personalize learning experiences and support teachers in administrative tasks, thereby saving time and enhancing the educational process. Despite the recognition of AI's value, many students remain unfamiliar with the range of AI tools available, limiting their interaction with these technologies. (Surugiu *et al.*, 2024) This lack of familiarity with AI technologies also extends to customers interacting with AI-based customer service tools. Therefore, companies must ensure that their implementations are intuitive and easily accessible. According to Babashahi *et al.* (2024) the integration of AI requires individuals and organizations to adapt continuously, emphasizing the importance of technical proficiency and adaptability. Tools like ChatGPT and Microsoft Copilot have brought AI into the public spotlight, making it more accessible and easier for people to explore and use often at no cost.

The integration of AI in customer service has led to significant advancements in operational efficiency and customer engagement. AI-driven chatbots and virtual assistants are practical examples of this integration, providing 24/7 support and personalized interactions. These systems utilize natural language processing and machine learning to respond to customer inquiries which enhances user experience. (Phadnis, 2025; Uloma, Okpeke and Onalaja, 2025) Despite these advancements, there are still practical gaps in the implementation of AI in customer service. One notable gap is the challenge of ensuring that AI systems can interpret and respond to complex emotional cues, which is essential for fostering trust and loyalty among customers (Phadnis, 2025) While AI can automate many tasks, there remains a need for a balance between technology and human interaction to maintain a personal touch in customer service (Amitabh, 2025).

1.1.2 Research motivation

In recent years there have been a few research articles related to AI on customer service. Here are listed the most relevant studies for this thesis and how they impacted the thesis structure and research methodologies. While existing research has explored the technical aspects of AI and its operational benefits, relatively less attention has been given to the customer perspective and how users experience these systems, and what expectations they have when interacting with AI rather than human agents. Given the rapid advancements in AI technologies and the evolving ways in which companies are implementing them in customer service, research conducted just a few years ago may no

longer fully reflect the current state of the field. Here are presented some of the main articles used for the literature review section of the study.

Voice-based AI in call center customer service: A natural field experiment (Wang et al. 2023)

Wang et al. (2023) discusses the impact of implementing a voice-based AI system in a call center setting, using data from a large telecommunications company. The study highlights how customer experience, request complexity and demographic factors influence demand for human agents and the effectiveness of AI. Speech recognition failures also tend to lead to more complaints. (Wang *et al.*, 2023)

When do consumers prefer AI-enabled customer service? The interaction effect of brand personality and service provision type on brand attitudes and purchase intentions. (Chen and Hu, 2022)

In this study Chen and Hu (2022) examined how the alignment between brand personality and customer service type influences consumer attitudes and purchase intentions. Results from three online experiments show that consumers prefer AI-enabled service when the brand signals competence and human service when it signals sincerity. The findings offer insights for marketers on when and how to deploy AI-enabled services effectively. Companies can also use consumer involvement to tailor service strategies more personally and enhance their marketing performance. (Chen and Hu, 2022)

How do AI and human users interact? Positioning of AI and human users in customer service. (Ahn et al., 2024)

Ahn *et al.* (2024) explores the dynamics of human-AI interaction through 200 recorded conversations with AI voice assistants in this study. They focus on conversational structure using conversation analysis. Study highlights that users often respond to AI prompts with keyword-like inputs, indicating a belief that communicating with AI resembles online searches. Another common response type was silence, prompting questions about AI waiting times and response adequacy. The study emphasizes that when considering confrontational design in AI, organizations should take cultural, social and linguistic factors into account.

The Service Robot Customer Experience (SR-CX): A Matter of AI Intelligences and Customer Service Goals. (Larivière et al., 2024)

This study investigates how different types of artificial intelligence influence service robot customer experiences and related service outcomes. With two field studies and two online experiments, the study finds that more sophisticated AI (thinking and feeling) enhances service robot customer experience, particularly among customers with hedonic service goals. It also highlights the strategic importance of aligning AI capabilities with customer service goals to optimize service delivery. (Larivière *et al.*, 2024)

While previous studies have explored consumers' perceptions of AI tools in customer service, this thesis aims to contribute to the existing body of research by providing more up-to-date insights into how consumers currently feel about AI in this context. Recent advancements in AI technologies, such as ChatGPT, may have influenced consumer attitudes and acceptance of AI in customer service. Drawing on the insights provided by these studies, the focus of this thesis was gradually shaped to emphasize the consumer experience of AI tools in customer service. While earlier research has often addressed technical functionality or organizational implementation, the decision was made to concentrate on how customers perceive and respond to AI-driven services.

1.2 Research goal and questions

This study explores the potential of AI in customer service field and tries to find ways it can improve customer experience. The aim is to get a better understanding of consumers' hopes and needs for customer service applications and how AI could be integrated. This study also tries to find the potential challenges that come with the adoption of AI in customer service. The main research question and sub questions are listed below in table 1.

Table 1 Research questions

First main research question	What are the benefits of AI in customer service?
Second main research question	What potential challenges are there with AI in customer service?

Sub research question	How do consumers perceive AI-driven customer service compared to human interaction?

This research aims to explore how AI can enhance customer experience in customer service interactions. The first main research question focuses on identifying the potential ways AI can improve customer service outcomes and overall satisfaction. The second main question investigates the challenges and obstacles organizations may face when implementing AI in customer service settings. Additionally, a sub-question examines consumer attitudes, preferences, and expectations when interacting with AI-powered systems compared to human agents.

The research focuses on the customer experience of AI-enhanced customer service, specifically examining tools that can improve customer interactions. The study does not cover internal AI tools but concentrates on those that directly impact customer experience. Through a combination of literature review and survey research, this study aims to provide well-informed and credible recommendations for organizations on how AI can affect services functionality and customer satisfaction.

1.3 Thesis structure

This thesis is organized into six main chapters, each contributing to understanding of AI and its application in customer service environments. Chapter 2 provides theoretical foundation by introducing the core concepts of AI. It begins with a general overview and then explores key divisions within AI. It also addresses the limitations and challenges of AI. Chapter 3 deals with practical use of AI in business, particularly in customer service contexts. It begins by situating AI within the framework of Industry 4.0 and then examines specific applications such as customer service centers, chatbots, and voice assistants. Chapter 3 also discusses the interaction challenges between AI systems and human users. Chapter 4 outlines the research methodology and materials used in this study. It describes research design, participant selection and information, and data collection methods. Chapter 5 presents the results of the qualitative survey that was conducted. It presents detailed findings on participants' experiences with AI-based customer service, their expectations, and concerns. The results are analyzed to identify key themes that reflect user perceptions toward AI in customer service settings. Chapter 6 concludes the

thesis by summarizing the key findings and providing answers to the research questions. The thesis' validity and limitations are evaluated and recommendations provided for future research on the use of AI in customer service.

2. ARTIFICIAL INTELLIGENCE

This chapter provides an overview of AI's historical development, and key divisions, including machine learning and deep learning. In addition, the chapter addresses the limitations and challenges associated with AI adoption, focusing on ethical, technological, regulatory, and economic perspectives and aims to provide understanding of AI's current landscape.

2.0 The concept of Artificial Intelligence

The term" Artificial Intelligence" originated in the 1950s when researchers developed technologies tried to replicate human ways to solve problems. (Simmons & Chappell 1988) In the year 1950 the broader concept of AI was formed with Alan Turing's seminal question, "Can machines think?" which laid the foundation for the famous Turing Test. IT is a method for evaluating a machine's ability to exhibit intelligent behavior equivalent to or indistinguishable from that of a human. (Marietto *et al.*, 2013) Artificial Intelligence refers to computational technologies or learning algorithms inspired by how humans' sense and learn. AI systems can take in and process more information than humans ever could. It can simulate lifetimes of alternative decisions and learn through trial-and-error experiences. (Faraj, Pachidi, & Sayegh, 2018) AI has capabilities to autonomously learn and improve its functioning unlike traditional decision support systems. (Kaplan and Haenlein, 2019) Over the decades, AI has progressed through significant milestones known as "AI winters". Early successes included programs like ELIZA in the 1960s, but modern advances have been driven by breakthroughs in machine learning (ML) and deep learning (DL). AI today is powered by mathematical algorithms and statistical analyses that enable machines to learn patterns from historical data and make predictions or decisions without explicit programming for every task. (Jan *et al.*, 2023a) First-generation AI systems have already surpassed humans' analytical comprehensiveness and decision speed (Kaplan & Haenlein 2019).

Recent developments have introduced tools such as Generative AI (GenAI), exemplified by systems like ChatGPT. Generative AI refers to AI systems capable of creating human-like content, such as text, images or music, based on large datasets. These technologies have expanded AI's applications across business, healthcare, education, and creative industries. (Fui-Hoon Nah *et al.*, 2023) As AI continues to integrate into various industries, it brings both opportunities and challenges. While it offers benefits like increased

efficiency and enhanced decision-making, it also raises concerns, including issues related to privacy and accountability. Therefore, the development of AI is increasingly focused on human-centered approaches, ensuring that technology aligns with human values. (Zhou *et al.*, 2023)

2.1 Divisions of Artificial Intelligence

In this section, the various characteristics and subareas of artificial intelligence, including machine learning, deep learning, neural networks, and generative artificial intelligence, are examined in detail. The relationships between these divisions are outlined and visually represented in Figure 1, providing an overview of how the different components of AI are interconnected.

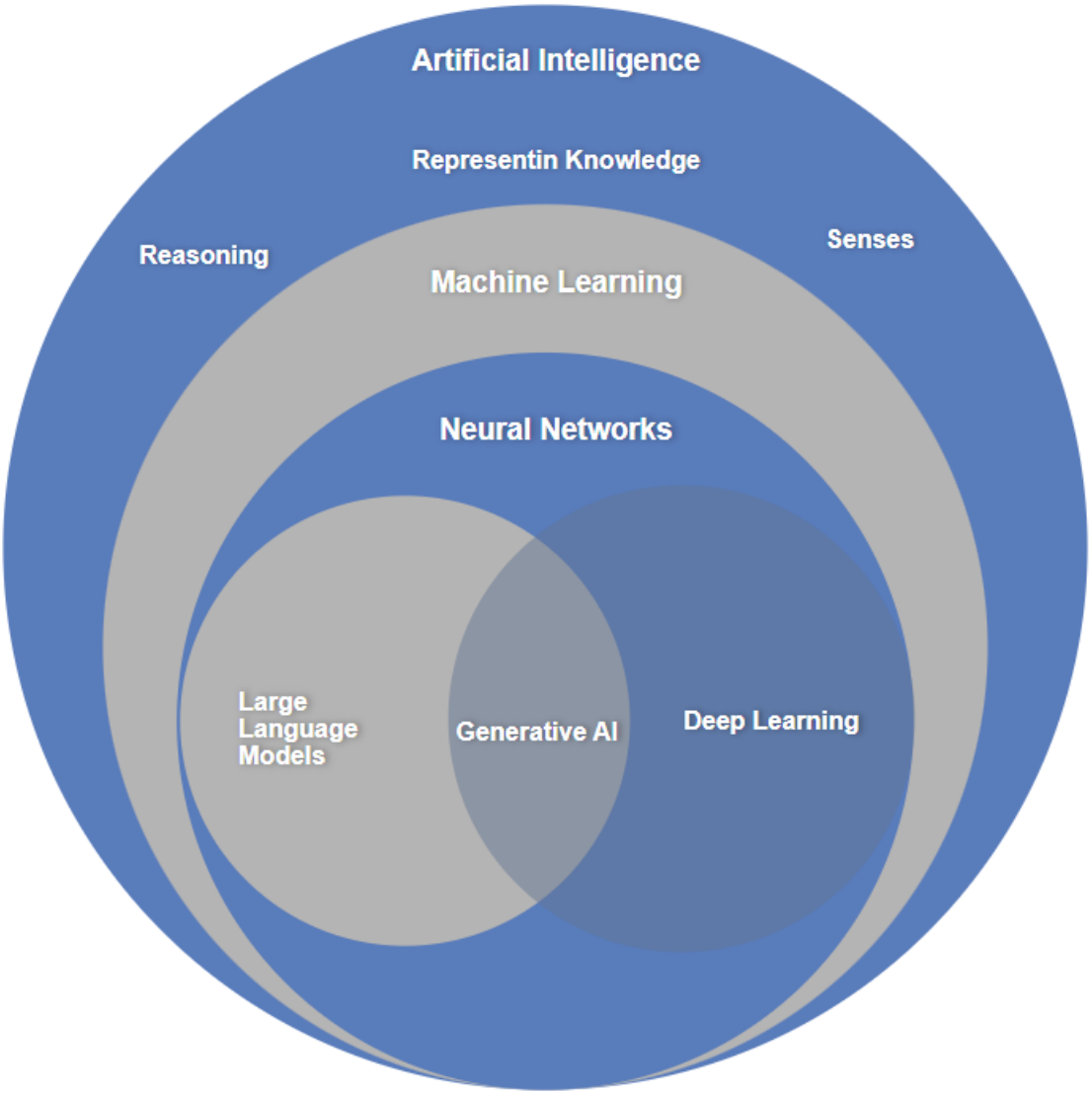

Figure 1 Key concepts of Artificial Intelligence

Machine Learning (ML) is a type of artificial intelligence where computers learn from data without being explicitly told what to do. It gets better at tasks by finding patterns and adjusting based on examples and this lets it either understand the data better or make predictions about what happens next. (Alpaydin & Bach, 2014) Machine Learning is often used as synonym for artificial intelligence and that might confuse public when talking about AI field. However artificial intelligence is broader term which also includes other aspects of intelligence such as reasoning, perception and sensing (Jan et al. 2023) Machine learning is still an important part on today's AI technology and most big AI-using companies use it to their applications. (Stepheson 2018)

Machine Learning usually consists of three categories: reinforcement learning, supervised and unsupervised learning. In reinforcement learning desired outcome is unknown and algorithms are given rewards and penalties to act in a way that maximizes rewards and minimizes penalties (Canhoto & Clear 2020). Reinforcement learning is used for example in games and robot navigation systems. (Zabala 2023) Supervised learning training data includes certain features or independent variables and their known outcomes. (Jan et al. 2023) This is representative in for example linear and logistic regression. Linear regression is useful when it's needed to predict continues outcomes by assuming a linear relationship between inputs and outputs, for example in stock prices. Logistic regression is used for binary classification problems such as identifying customer churn. (Zabala 2023) In customer service this could be used in recognizing service demand or customer behavior. Unsupervised learning comes to use when there is no labeled data available, and algorithm tries to spot patterns in the data. Walczac & Cerpa (2003) says that unsupervised learning methods have less computational complexity and that is why they are often used for classification problems. Other use cases for unsupervised learning are, for example, recognizing customer segmentation. (Zabala, 2023)

Neural Networks (NN) are subfields of machine learning that tries to mimic human brains. It includes Artificial Neural Networks, Recurrent Neural Networks and more advanced architectures like Convolutional Neural Networks (CNNs) and Transformer models. (Paschen, Pitt and Kietzmann, 2020). These are artificial intelligence models that consist of interconnected artificial neurons. They are capable of learning intricate patterns and representations. (Zabala, 2023) Neural networks have been applied in various domains, including customer targeting, by mimicking knowledge acquisition through the processing of interconnected artificial neurons (Dwivedi *et al.*, 2023). According to Jan *et al.*, (2023) neural networks have been used across various industries, from predicting manufacturing outcomes to optimizing processes in additive manufacturing and chemical

engineering. For example, in additive manufacturing, an artificial neural network was employed to predict pressure in 3D printing or enabling better control. Neural networks are particularly valuable in handling large and complex data generated from sensors and Internet of Things (IoT) devices with learning patterns that would be difficult to detect manually. Their ability to process real-time data makes them well-suited for dynamic environments, such as smart factories. (Jan *et al.*, 2023a) A key strength of neural networks lies in their flexibility and capacity for learning from large and diverse datasets without the need for explicit rule-based programming. This has enabled their widespread use across different sections from natural language processing and computer vision to solving complex mathematical problems. (Cuomo *et al.*, 2022)

Deep learning (DL) is sub-discipline of machine learning based on neural networks that mimic human behavior in collecting information and developing situational awareness. Deep learning removes the need for human interaction in manipulating data or developing computer programs. These methods have helped to develop multiple machine learning applications such as speech and object recognition (LeCun, Bengio and Hinton, 2015). It can also be utilized in demand forecasting or troubleshooting (Sahoo *et al.*, 2022).

In recent years deep learning has become a cornerstone of many AI solutions, extending its use beyond image recognition and natural language processing to a broad range of applications across industries. With the advancements in algorithm design and availability of large datasets, deep learning is increasingly adopted in various fields. Deep learning's ability to automatically detect patterns in large and complex data sets allows it to perform tasks like classification and prediction often surpassing traditional methods. (Jan *et al.*, 2023a) Deep learning advancements have enabled generative artificial intelligence (GenAI) as a key application.

2.2 Generative Artificial Intelligence

Generative AI refers to AI that relies on deep learning and generates new data that reminds them of its training data. It is used for example to create text, photos and sentiment analysis. (Zabala 2023) GenAI combines fields of artificial intelligence such as machine learning, deep learning and large language models to produce applications like ChatGPT, Gemini (previously known as Bard) or Microsoft Copilot 2023 (Marquardt, 2025). GenAI's most effective technologies are deep learning-based generative adversarial neural networks (GAN) and variational autoencoders (VAE). These techniques are suitable for finding small relations in datasets and learning from them. GAN consists of

generative models and a discriminative model, which are trained simultaneously. VAEs are generative machine learning models that use a pair of neural networks to compress and then rebuild the input data, using a set of latent coordinates. Practical use scenarios for these are for example with GAN it is possible to create realistic avatars after training and VAE creates possibility to ask more deeper questions from AI. (Hirn *et al.*, 2022)

Rising number of organizations are integrating GenAI chatbots to solve complaints or provide aftersales support (Ashfaq et al. 2020). Google also announced that it will be upgrading its virtual assistant to Generative AI version Gemini in all mobile phones and in time other smart devices as well. (Marquardt, 2025) This shows that GenAI is slowly being integrated into most everyday devices. Advancements in GenAI technology and applications are one of the reasons AI has become more known to the public within the last few years.

3. AI IN BUSINESS AND CUSTOMER SERVICES

Large organizations often don't search for new business model opportunities with GenAI but use it to make operative work more efficient. They try to find ways to implement new technologies into current tasks. In a study conducted by Solita, of the respondents representing senior management at Finnish TOP500 companies, 27 percent said they had not yet utilized GenAI. (Solita Gen AI Survey Report, 2023) This shows that over 70% have used it in some way. Already in 2019 Hyder et al. wrote that artificial intelligence has gained attention across industries and with the release of Chat Generative Pre-trained Transformer (ChatGPT) in 2022 by OpenAI, AI had attracted worldwide attention with gaining over 3 billion cumulative visits in three months (Fui-Hoon Nah *et al.*, 2023; Rosen, 2023). With ChatGPT already passing Turing test by fooling people its answers where from real people (Yalalov, 2022) AI is expected to revolutionize the way we live, work and communicate. Generative AI offers application possibilities in various different fields including business, education, healthcare, and content generation (Fui-Hoon Nah *et al.*, 2023)

This chapter begins by exploring the concept of the Fourth Industrial Revolution, also known as Industry 4.0, and its connection to the development and implementation of AI. Following this, the chapter delves into specific AI applications relevant to customer service, including chatbots, voice assistants, and autonomous virtual agents.

3.1 Artificial Intelligence for Industry 4.0

Industry 4.0 is the fourth phase of the industrial revolution, characterized by a focus on cyber-physical systems and artificial intelligence. The first industrial revolution revolved around steam and water powered mechanization. The second phase focused on electrification and mass production while the third one included robotics and digital technologies. The fourth phase relies heavily on the increasing amount of data that is being collected and making decision based on that. (Jan *et al.*, 2023a) In the current information age data is the most valuable asset for gaining competitive advantage (Harding *et al.*, 2005; Taranto-Vera *et al.*, 2021). Industry 4.0 is a collection of various technologies including big data, cloud computing, Internet of Things (IoT) and Artificial Intelligence. (Yao *et al.*, 2017)

There have been several studies published about the AI context of Industry 4.0 but those do not comprehensively cover how AI is being used in different sectors, however Jan *et al.* (2023) examines the potential solutions and issues encountered in different industry sectors. While customer service doesn't directly fit into any of the sectors laid out in the article, the closest to it are business, management and accounting, and social sciences. (Jan *et al.*, 2023a) Customer service is a crucial aspect of business operations, customer relationship management, and overall business strategy. Also understanding customer behavior, satisfaction and communication affects customer service and are relevant aspects of social sciences. Alsheibani *et al.*, (2020) identified six key steps on how business can drive value with using AI. The steps are:

1. AI compatibility with existing systems
2. AI skill set available
3. Effective use and availability of data
4. The business case aligned with AI use
5. Gains/goals to be achieved by using AI are identified
6. Business owners are supporting AI owners to make the move (Alsheibani *et al.*, 2020)

Companies can look at these steps and try to evaluate their potential to implement AI into part of their operations. This study aims to provide organizations with some possible solutions to improve their customer service with analysis of current consumer feelings towards AI enhanced customer service. Even though there may be many possibilities, companies should evaluate these case by case basis. Jan *et al.* (2023) also discusses how common source of concern with Industry 4.0 is return of investment when implementing AI tools which is especially true for small to mid-tier businesses. In a study conducted in Poland it was also found that many companies don't believe that AI will give them market advantages and that only large companies are willing to invest in the change. Most smaller businesses are not interested because they can't see tangible short-term benefits. (Stanisławski and Szymonik, 2021) The availability and quality of data is also seen as one of the major barriers stopping companies from embracing AI as part of their business models. While the newest GenAI models can help with those problems the challenge is in identifying the issue and using the right algorithms for the right problems. Open datasets can help simulate processes and reduce costs, especially in

early adoption stages. AI applications and concerns are often industry-specific which limits cross-sectoral transferability. (Jan *et al.*, 2023a)

Even though Jan *et al.* (2023) study focused on more industrial production companies, many of the principals and findings can be translated to companies customer service departments. While several frameworks were identified, the study also emphasized the need for a generalized framework to help industries adopt AI more effectively (Jan *et al.*, 2023a)

Kimmerle (2020) introduced an EPIC approach (Education, Patience, Innovation and Collaboration) for organizational learning in the context of digitalization and AI. Education emphasizes the creative process of knowledge construction. Organizations should empower their employees with critical think and decision-making capabilities that algorithms can't replicate easily. Highlighting the importance of patience is necessary in the era of digitalization where immediate results are typically desired. Patience allows deep understanding of complex issues. Digital environments often offer numerous opportunities for innovation which emerges when organizations allow experimentation and reflection on errors. Communication on digital knowledge communities is also crucial in the modern age and effective collaboration involves shared processes and goals that enable joint problem-solving. (Kimmerle, 2020)

3.2 AI in customer service

3.2.1 Customer service centers and chatbots

Call center customer service is an essential channel for customers to interact with companies (Aksin, Armony and Mehrotra, 2007; Tezcan and Behzad, 2012). The advancements in information technology brings opportunities to improve service-delivery operations in call centers and expand to larger scale (Adria and Chowdhury, 2004a) The call center provides customers with telephone access to information services that are traditionally provided by human agents, who have access to databases. Call centers combination of agents with databases enables them to better manage the relationship between organization and client (Adria and Chowdhury, 2004b) Early 2000s research demonstrated the rapid expansion of call centers in the US and their widespread adoption across organizations of all sizes. (Buchanan and Koch-Schulte, 2000)

Three key performance indicators that customer service centres follow are call length, demand for human service and customer complaints. (Wang et al., 2023) Net Promoter Score (NPS) is simple but effective method that tracks customer loyalty and complaints

based on their ratings from 0 to 10. Then customers are categorized as Promoters, Passives, or Detractors, and the NPS is calculated by subtracting the percentage of Detractors from the percentage of Promoters, resulting in a score between -100 and 100. (Medallia, 2025) Call length tells the durations of customers call and is an important indicator for the management of service center as it affects scheduling and routing. (Gans, Koole and Mandelbaum, 2003) With an IVR system customers need to spend longer time on calls as they navigate through the service menu. It has been studied that using speech recognition in AI system can impact greatly on the call length as customers can get the service they need faster. (Wang et al., 2023) Other common KPIs that customer service centers follow are Average Speed of Answer (ASA) and Phone or Chat Service Level Agreement (SLA). The SLA defines a specific timeframe that an organization has chosen for its employees to answer a call and measures the percentage of calls that achieve that goal. The continuous effort to improve these metrics is a primary driver for integrating the advanced AI tools discussed throughout this thesis.

Chatbots have been a key part of larger corporates websites for a while now, but they have seen improvements and bigger focus with generative AI. Brands are increasingly turning to new technologies to engage customers (Campbell *et al.*, 2020). Chatbots can be either voice-controlled like Google Home/Assistant, Siri, Alexa or text-based. Conversational chatbots match users input, and responses are created by developers who anticipate the most likely inputs (Marietto *et al.*, 2013; Ramesh *et al.*, 2017) With the exponential growth of AI models in last few years it is estimated that future versions of GenAI chatbots could be over million times more powerful than currently available ones (Rosen, 2023). Still even the current highest quality chatbots can misunderstand users or produce low quality and inaccurate responses (Sands *et al.*, 2020) so organizations need to be careful how they incorporate chatbots into their operations in way that doesn't hurt the brand or alienate customers.

Chatbots have been increasingly utilized in the customer services over past few decades with IBM's Watson Assistant, Salesforce's Service Cloud Einstein, and Google's Dialogflow being few examples of that. (Ferraro *et al.*, 2024) Chatbots are often used for customer service tasks such as resolving complaints, identifying products, and providing after-sales support (Ashfaq *et al.*, 2020) This brings multiple benefits including constant availability, scalability, cost and time savings over human agents and potential to boost customer satisfaction (Xu *et al.*, 2017; Adamopoulou and Moussiades, 2020; Jenneboer, Herrando and Constantinides, 2022). *Juniper Research* (2019) has already shown that significant efficiency gains are possible with using GenAI chatbots with 7.3 billion dollars

savings in the banking sector in 2023. While business integration is rising, the customer consumption has been slower (Restrepo, 2023) Customers value speed, accessibility and consistency provided by chatbots (Haugeland *et al.*, 2022; Zhang and and Bjørkli, 2023) Additionally if chatbots are embedded with human-like characteristics (e.g. warmth, friendliness) they can foster positive outcomes like satisfaction, trust and engagement (Ferraro *et al.*, 2023)

While GenAI provides numerous opportunities for companies it is important to address potential downsides and paradoxes. In table 2 there are listed six potential paradoxes from (Ferraro *et al.*, 2024) Often certain benefits that AI brings can come with downsides as well.

Table 2 Potential paradoxes caused by GenAI (Ferraro* et al.*, 2024)

Paradox	Description	Possible solutions
Connected but isolated	GenAI chatbots can increase customer connection to brands, but they also carry the risk of making customers feel more isolated	Transparency and using chatbots to complement not replace humans
Higher quality but less empathy	While chatbots can enhance quality of customer service they lack the empathy of human agents	Train chatbots to understand complex requests and respond with empathy
Lower cost but higher price	Can lead to lower operational costs but reductions come with societal costs	Trains employees to use GenAI as tool and consider new job positions

Personalized but intrusive	Customizable based on previous interactions	Provide customers with control over their data
Satisfied but frustrated	Service outcome can satisfy customers, but they can also be frustrated	Identify frustration early and reassure customers of the ability to speak to humans
Powerful but vulnerable	Can revolutionize many areas but are also vulnerable to harmful influence	Create safety filters for detection and limit the scope of used data

3.2.2 Voice assistants and IVR systems

When customers call to the company's customer service their phone calls are first connected to an Interactive Voice Response system (IVR). On the basic versions of this, customers communicate with IVR through the numbers on the keypad to select the correct services. If the IVR system can't handle customers' requests the phone call will be directed to human agents. Traditional IVR systems differ from new generation voice-based AI systems. Considering the technological advantages of voice-based AI system, it can provide significant improvement over IVR system to customer service experience. (Wang *et al.*, 2023) IVR system traditionally relies on directing customer in a step-by-step model (Suhm *et al.*, 2002). If customers want to switch services, they need to return to the main menu and repeat steps. Those systems were developed by industry experts based on their service experiences and they require customer to follow pre-set rules without the possibility to use customers previous data to enhance service (Resnick and Virzi, 1995). AI voice systems can improve flexibility of service flows and enable personalized service (Wang *et al.*, 2023). Studies show that customers often feel frustrated with IVR systems because they provide less customized service and do not understand customer's needs (Dean, 2008) Therefore customers try to avoid using IVR systems and seek direct interaction with human agents (Tezcan and Behzad, 2012). AI voice systems are more capable of natural dialogues and evolve with data, unlike the rigid IVR systems. While initial AI implementations may temporarily increase interaction time due to user

unfamiliarity, they significantly reduce customer complaints over time. Customers' demands for human agents might also increase at first due to discomfort with AI but over time, especially for simple requests, AI voice systems can significantly enhance customer satisfaction. (Wang *et al.*, 2023)

Call centers are predicted to be new sandbox for AI-powered customer experience because of AI-tools possibilities to increase loyalty and profitability (Forbes, 2020). Most prior studies on the matter have mainly focused on AI-supported automation and smartness effects product pricing (Karlinsky-Shichor and Netzer, 2019), decision-making (Li and Li, 2022) and quality management (Senoner, 2021) but Wang et al. (2023) studied the implementation of voice-based AI systems in business-to-consumer service settings providing insight into how it can effect for example call length, customer's demand for human service, and customer complaints in call center customer services.

With prior literature we can define AI systems as algorithm that performs like human mind in perceptual, cognitive, and conversational functions (Longoni, Bonezzi and Morewedge, 2019). According to (Sun *et al.*, 2019) voice-based AI in online shopping affects to consumers search and purchase behavior. How AI voice systems affect customer complaints is dependent on the complexity of requests. Customers who switched to using AI systems instead of IVR systems tended to make fewer complaints when they were faced with simple service requests. AI systems also tend to reduce customer complaints for older and female customers. (Wang *et al.*, 2023). With AI system customer can interact in natural dialogues instead of structured and limited choices which allows them to express themselves more clearly (Fountaine, McCarthy and Saleh, 2019). For the natural dialogue to work for consumers organizations must focus on improving AI system capabilities continuously, particularly in speech recognition accuracy, to enhance service quality and customer satisfaction (Wang *et al.*, 2023)

3.2.3 Challenges in AI-human interaction

Humans interact with AI in customer service setting mostly through previously mentioned voice assistants or chatbots. These systems initiate dialogue (first pair-part, FPP) and expect a structured response (second pair-part, SPP) from humans, reflecting a turn-taking system like human conversations. Systems are trying to give humans the feeling of holding power by inviting them to respond more casually even though AI system used formal language. Typically, users respond with brief keywords, natural casual speech, or even non-verbal pauses, which AI must handle flexibly. (Ahn *et al.*, 2024)

Even though chatbots and voice assistants have developed in recent years there still lie some challenges in the interactions. According to Ahn *et al.* (2024) miscommunication can be problem for even the most advanced AI systems if users deviate from expected communication patterns. Users might provide incomplete information, speak in unexpected ways, or stay silent, requiring AI to adapt dynamically. (Ahn *et al.*, 2024) With AI voice systems speech recognition errors can lead to increased demand for human assistance. Especially in complex service requests, if AI fails to correctly interpret user input, customers become frustrated. (Wang *et al.*, 2023) This can be true with for example people with strong accents or poor language skills of the available languages. Ahn *et al.* (2024) discussed how the use of politeness strategies and honorifics in especially Korean AI systems reveals how important it is for AI to align with social expectations. Systems that fail to respect cultural nuances can risk alienating customers. AI can also create a false sense of trust where users rely on AI outputs without critical evaluation, leading to possible misinformation (Fui-Hoon Nah *et al.*, 2023). For example, users might follow incorrect advice if they over-trust the AI system. While AI can mimic human responses, it often lacks the genuine empathy needed for complex and emotional situations. Studies show that "feeling AI" (AI that simulates emotional intelligence) improves customer experience for users with pleasure-seeking service goals, but results are mixed for task-oriented goals. (Larivière *et al.*, 2024) In longer interactions users often learn how to interact better with AI and the systems improve with the collected data. The learning process can still be slow and initial negative experiences may cause user resistance. When AI cannot meet customer's needs, it should quickly and smoothly transfer the conversation to a human agent (Wang *et al.*, 2023). Delays or obstacles in this transition can cause frustration and systems could be designed to recognize when users are dissatisfied and offer escalation options early. Using prior interaction data, AI can customize conversations by addressing users by name and remembering past issues. Personalized service not only makes the AI seem more human-like but also increases efficiency and satisfaction (Wang *et al.*, 2023)

3.3 Limitations and challenges of Artificial Intelligence

While AI offers major benefits, it still brings significant challenges with integrating Generative AI into organizations. Challenges can be divided into four categories which are ethics, technology, regulations and economics. Ethical challenges include, for example, potential misuse of technology, biases, over-reliance and privacy. (Fui-Hoon Nah et al. 2023) Training data represents only a fraction of the population and that might create

exclusionary norms, and the content produced could be violent or offensive (Zhou *et al.*, 2023) Generative AI can also be used for cheating in exams and it might also disclose sensitive information. (Fang *et al.*, 2017; Susnjak, 2022) AI often acts as a "black box" and customers don't know how decisions, like prioritization, are made (Dwivedi *et al.*, 2023). One major ethical concern in AI-based customer service is the loss of accountability. When a chatbot provides incorrect advice, it remains unclear who should be held responsible. Ferraro *et al.* (2024) suggests that as generative AI becomes more autonomous in interactions, traditional accountability structures are challenged, creating legal and ethical uncertainty. Similarly Dwivedi *et al.*, (2023) highlights that the absence of clear responsibility in AI decision-making processes risks undermining customer trust and may expose organizations to reputational and even legal risks. Especially the large technology giants should take appropriate actions to increase awareness among the users of the ethical issues surrounding AI (Fui-Hoon Nah *et al.*, 2023)

Technological challenges can be divided into hallucination, quality of training data, authenticity and prompt engineering. (Fui-Hoon Nah *et al.*, 2023) Hallucination is widely recognized as limitation of AI and refers to phenomenon where the content created is nonsensical or not true to source input (Alkaissi *et al.*, 2023; Ji *et al.*, 2023) Quality of the training data can be improved with data cleansing, although its expensive given the large amount of data in for example diffusion models (text-to-image). (Chen *et al.*, 2021; Gozalo-Brizuela and Garrido-Merchan, 2023) Factual errors, unbalanced information sources or embedded biases can greatly impact the output of the model (Gozalo-Brizuela and Garrido-Merchan, 2023)

Regulations include copyright and governance. With AI still being at relatively early stages and people and organizations learning to adapt to it, the regulations haven't yet reached mature levels. Generative AI is designed to generate content based on a input and some of the training material it uses might be the work of another person that is covered by copyright laws. (Fui-Hoon Nah *et al.*, 2023) Therefore users need to be careful when creating material with Generative AI applications and especially if sharing them online (Pavlik, 2023) To ensure that Generative AI works in way that benefits society, appropriate governance is needed. However, machine learning's "black box" nature hinders control and accountability. Also because of the information imbalance, it is hard to make specific laws for programmers. (Fui-Hoon Nah *et al.*, 2023) In addition to copyright and content ownership issues, data privacy regulations are part of the AI applications as Dwivedi *et al.*, (2023) state that customers have the right to be forgotten, which means they can request companies to delete all personal information about them from the AI

databases. As the volume of data continues to grow, concerns about data security have also increased. Several major organizations have faced significant fines for failing to comply with the General Data Protection Regulation (GDPR). Meta was fined 1.2 billion dollars for transferring European users' personal data to the United States without implementing appropriate data protection measures (EDPD, 2023). Similarly, Amazon received a fine of 746 million dollars for operating a targeted advertising system without obtaining proper user consent (Aristotelis, 2025). With AI being a larger part of companies' services and strategies, the amount of data grows.

Economic challenges are related to the labor market, distribution of industries and income inequality. (Fui-Hoon Nah et al. 2023) Despite AI increasing productivity it may also create job displacement in the labor market and staying competitive requires reskilling of employes. (Zarifhonarvar, 2023) AI can also create new jobs in different industries. (Dwivedi *et al.*, 2023) Organizations need to find ways to make use of AI without it overshadowing talent that works there. Industries that are less creative and don't require critical thinking are in danger of being impacted or even replaced with generative AI (Dwivedi *et al.*, 2023) Incorporating "human-in-the-loop" method may provide advantages that addresses some of the previously mentioned challenges including reducing bias, maintaining human level precision and providing accountability (Monarch, 2021).

For organizations AI can be a double-edged sword. It can provide great advantages and help businesses to increase efficiency and generate new content such as advertisements. On the other hand, it cannot be fully trusted because of the possibility of misinformation or hallucinations. Many of the challenges with AI can be an effect of sociotechnical issues and human needs and values. (Fui-Hoon Nah *et al.*, 2023) Having humans closely collaborating with AI in organizations can reduce bias, create employment, augment rare data and maintain human-level precision (Monarch, 2021).

4. RESEARCH METHODOLOGY AND MATERIALS

This chapter discusses the research methodology and materials used for the thesis. Section 4.1 outlines the research design, while 4.2 describes the materials and survey procedure. Section 4.3 focuses on the participants, including their demographics (4.3.1), general attitudes towards technology (4.3.2), and personality traits (4.3.3). Finally, 4.4 presents the thematic analysis process.

4.1 Research design

The research plan follows the framework of the research onion model by Saunders, Lewis and Thornhill (2019) as illustrated in Figure 2. This model outlines the methodological choices made for this study. The objective of the research is to explore how artificial intelligence (AI) can enhance customer service center operations in a way that improves the overall customer experience. This will be examined through a comprehensive literature review of existing studies and an online consumer survey.

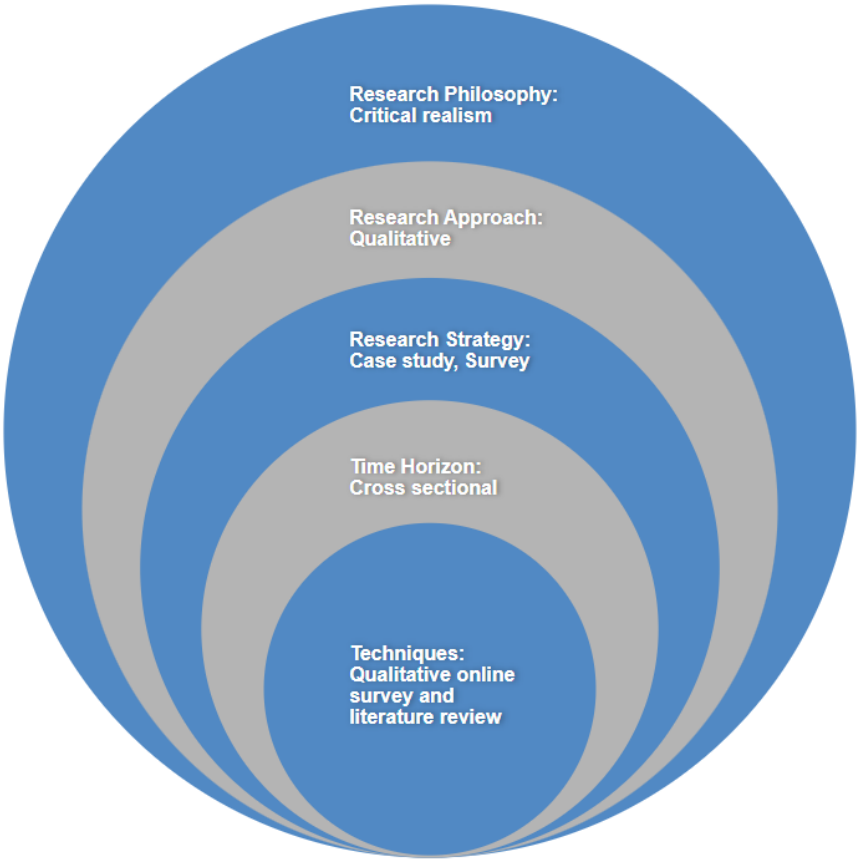

Figure 2 Research onion model (adapted from Saunders, Lewis and Thornhill, 2019)

The outer layer in the model is known as research philosophy. This refers to assumptions about reality or knowledge and beliefs about values. (Saunders, Lewis and Thornhill, 2019) In this study it is recognized that people have real experiences and concerns however

The second layer is the research approach which refers to theory that can be either tested or created with research. Deduction means that existing theory is tested through hypothesis and then either verified or falsified. Induction means that research explores phenomenon and created a conceptual framework that can be used to create new theory

Third layer is Research strategy which refers to whether the study is quantitative, qualitative or mix of both. With quantitative method numeric data is collected and analyzed. With qualitative methods no-numerical data is generated through, for example, interviews. (Saunders, Lewis and Thornhill, 2019) This research uses qualitative methods to find deeper and broader understanding of consumers' needs for customer service and how artificial intelligence could help with that. Quantitative method wouldn't give as much detail in the answers.

Fourth layer is Time Horizon which can be either cross-sectional where a phenomenon is studied at a particular time or longitudinal where the subject is studied over a longer period. (Saunders, Lewis and Thornhill, 2019) This study will be conducted in the span of 6 months and hence it's cross-sectional.

The final layer of the model is techniques for data collection. (Saunders, Lewis and Thornhill, 2019) For the thesis this consists of an online survey collecting data about participants' thoughts on AI in customer service and literature reviews for basing the theoretical framework for the subject.

Andor was one of the services used for finding literature related to thesis topics. AI and customer service was used as keywords and filters were also used to narrow down the search results. Available online, peer-reviewed and 2022-2025 helped to get only reviewed, easily available and recent results so that the thesis would consist mostly of up-to-date material as AI has evolved in the last 5 years. Snowball effect was also used to find more materials related to field by examining references in selected articles.

4.2 Materials and survey procedure

This section presents the materials used to support the research as well as the survey procedure: Two primary sources were utilized: academic literature relevant to the research topic and empirical data collected through an online survey. The literature review was based on peer-reviewed journal articles and academic books, with particular emphasis on recent studies and theoretical frameworks related to AI applications, user perceptions, and organizational implementation.

The online survey consisted of two main categories sections: ten core questions focused on customer service and the use of AI and questions related to demographic and background information of participants including basic demographic questions (age, gender, nationality and education), participants' experience with technological products and personality traits scale (i.e., BFI-10, Rammstedt & John, 2007), and the complete list of survey questions is provided (see Appendix A).

Data was collected through an online qualitative survey consisting of open-ended questions, allowing for detailed responses. This method was chosen to enable a broader reach than individual interviews would have allowed, as it permitted participants to respond at their convenience without the need to organize multiple one-on-one sessions. LimeSurvey was selected for the survey implementation due to its versatile customization options for designing questions. The survey was distributed to participants with prior experience in AI-powered customer service tools such as chatbots or AI voice systems. The questions were designed to gather broad insights into consumer perceptions of AI in customer service, focusing on its possibilities, challenges, and the qualities of good customer service in general. Minimum limit of 100 words for the questions related to AI to get more nuanced answers.

Questions were designed to encourage participants to provide detailed and reflective responses, allowing for a deeper understanding of their thoughts and experiences. Participants were provided with an information sheet and a privacy notice outlining the purpose of the research and data handling procedures. All data was processed in accordance with GDPR regulations, and any personal information was deleted upon completion of the study.

4.3 Participants

4.3.1 Demographics

A total of 26 participants were recruited as regular consumers through social media platforms such as WhatsApp and Telegram. Survey was successfully enrolled during **April-May 2025**. Of these, 24 participants completed the survey and were included in the final data analysis. Demographic details of the participants are presented in Table 3.

Table 3 Demographic information of participants

ID	Age	Sex	Education
1	23	Male	Bachelor's Degree
2	27	Female	Master's Degree or higher
3	26	Male	High School Graduate
4	28	Male	High School Graduate
5	17	Male	Less than High School
6	26	Male	Bachelor's Degree
7	23	Female	Bachelor's Degree
8	22	Male	Associate's Degree
9	22	Male	High School Graduate
10	25	Male	Prefer not to say
11	24	Male	Less than High School
12	25	Prefer not to say	Bachelor's Degree
13	26	Male	Bachelor's Degree
14	23	Female	High School Graduate
15	25	Male	Master's Degree or higher
16	28	Male	Associate's Degree
17	27	Male	Associate's Degree
18	23	Female	Bachelor's Degree
19	29	Male	Associate's Degree

20	24	Female	High School Graduate
21	36	Female	High School Graduate
22	31	Male	Associate's Degree
23	22	Female	High School Graduate
24	38	Male	Associate's Degree

Among the 24 respondents, 16 identified as male, 7 as female, and 1 who preferred not to disclose their sex. Despite the uneven distribution, there was sufficient representation from each group to avoid bias in the results. The participants' ages ranged from 17 to 38 years, with an average age of 25.8. Nationality-wise 22 identified as Finnish and 2 from other backgrounds. Educational backgrounds varied considerably: 14 participants had completed education beyond high school, 9 listed high school as their highest level of education, and 1 chose not to answer. This variation allows for a broader understanding of how educational level may influence perspectives on AI in customer service.

4.3.2 General attitude towards technology

With technological products experience questions, participants were given four statements and were asked to answer those from scale of 1 (Strongly disagree) to 5 (Strongly agree). With these questions the goal was to get knowledge on how participants feel using technological products and how that might affect their answers for the AI related questions.

When answering “I feel apprehensive about using technical products/systems,” participants leaned slightly below neutral, suggesting mild apprehension exists but is not widespread. “It scares me to think I could lose a lot of information by hitting the wrong key” received low agreement, indicating most participants are not overly concerned about making critical errors. “I hesitate to use technical products for fear of mistakes I cannot correct” also showed low agreement, reflecting a general confidence in the ability to fix errors. “Technical products are somewhat intimidating to me” had the lowest level of agreement, suggesting participants are generally not intimidated by technology. The highest variability is seen in the first question with standard deviation (1.37), suggesting a more diverse range of comfort levels with using technology. Other questions have lower standard deviations (0.77–0.87), indicating relatively consistent low anxiety across most participants. The participants showed low levels of technological anxiety, with most responses leaning toward disagreement with negative statements. This suggests that

the sample group is comfortable using technical products, which can contribute to higher tolerance or openness toward AI-based systems, less fear in interacting with new or automated interfaces and greater willingness to adopt new customer service technologies

4.3.3 Personality traits

In the next part of the survey participants were asked to answer 9 statements on their personality traits. With the personality trait, the goal was to get more information about the participants personalities and try to associate them with answers to AI related questions. (McCrae, Costa and Dolliver (1991) presented model of Big Five personality traits and how Five-Factor Model can be used to analyze the results. The Five Factor Model (FFM) is a theoretical framework that organizes these traits. It proposes that individual differences in personality can be largely explained by where a person falls on these five dimensions. The Big Five personality traits describe five broad dimensions of human personality:

• Openness to Experience – Creativity, curiosity and willingness to try new things.

• Conscientiousness – Organization, dependability and discipline.

• Extraversion – Sociability, assertiveness, and emotional expressiveness.

• Agreeableness – Compassion, cooperation and trust in others.

• Neuroticism – Emotional instability, anxiety and moodiness. (McCrae, Costa and Dolliver, 1991)

On this thesis these five dimensions can be used to identify connections how certain traits correlate with different expectations or perceptions about AI in customer service. Are for example people with high in Openness more willing to try AI-based services or are highly Neurotic individuals more concerned about mistakes by AI. This information can be interpreted using the Five-Factor Model of personality. The first five questions in the survey correspond directly to the five dimensions of the model, while the last four questions are inversely related to openness, conscientiousness, extraversion, and neuroticism. (McCrae, Costa and Dolliver, 1991)

On average, participants demonstrate moderate levels of extraversion. They appear sociable, enthusiastic, and enjoy engaging in social interactions, while also appreciating moments of solitude. Agreeableness scores are slightly lower, suggesting that participants may be somewhat skeptical or critical of their interactions with others. Participants

show high levels of conscientiousness, indicating strong self-discipline and a consistent approach to responsibilities. Neuroticism scores are low, which reflects emotional stability, calmness, and a reduced tendency to experience stress or negative emotions. Lastly, participants generally score high in openness to experience. They tend to be curious and receptive to new ideas and novel challenges.

4.4 The thematic analysis

There is no single universally accepted way to analyze qualitative data. Usually summarizing and refining data can lead to better outcomes. Literature emphasizes the importance of systematic approaches to enhance the quality of qualitative research. (Gupta, 2024) In the empirical section of this study, the aim is to identify the expectations, hopes, concerns, and prejudices that consumers may have regarding the adoption of AI in customer service. It is also examined how this information can be utilized by companies to develop improved customer service practices that better meet customer needs.

For this study thematic analysis was selected as the primary data analysis method as it provides possibility to search for the survey answer for consistent themes across the answers and provide valuable information to the theory basis found in the first half of the thesis. Thematic analysis was recognized in the 1970s but its history since then hasn't been consistent (Braun and and Clarke, 2006) Despite its popularity there is no established process description for thematic analysis and it can be approached from different angles (Ozuem, Willis and Howell, 2022). Thematic analysis can be divided into four phases that can be repeated and happen simultaneously: getting to know the material, coding the material, recognizing themes and relationships, and testing proposals. This process is presented in Figure 3. (Saunders, Lewis and Thornhill, 2009). Gruber *et al.* (2008) expands this further with laddering technique which contains similarities with thematic analysis. Below is describes steps taken to analyze the data collected via survey for this thesis.

Figure 3 Thematic Data analyzing process

The research problem examined in this study is practical in nature. Eskola and Suoranta (2014) emphasize that thematic analysis is a suitable method particularly for addressing practical problems. By applying a theoretical framework, structure can be brought to the process, ensuring that each step is purposeful and grounded in the research questions. By applying the thematic analysis process (Saunders et al., 2009), we can translate raw survey responses into structured insights that contribute directly to theory and practice. This analytical approach ensures that the answers to our research questions are grounded in the real experiences and expectations of consumers, enhancing the relevance of the findings.

5. RESULTS OF THE RESEARCH

In this chapter, the results of the study are presented and discussed. Each survey question is introduced alongside a summary of the corresponding responses. A thematic framework analysis is employed to interpret the qualitative data. The analysis begins by examining individual categories and their related themes. Following this, the key themes that emerge across all categories are summarized, with attention also given to relevant demographic influences. The chapter is structured as follows: experiences with AI interactions (5.1), expectations of satisfactory customer service (5.2), potential benefits and initial thoughts about AI in customer service (5.3), concerns and future improvements for AI in customer service (5.4), summary of themes (5.5), and supplementary findings (5.6).

5.1 Experiences with AI interactions

In this section the aim was to get real-world experience from participants about how AI has worked for them in customer service situations. With question “Can you describe your experiences with AI-powered customer service, such as chatbots or automated phone systems? Please give me some specific examples” participants shared their experiences with AI powered customer service and the experiences varied through the answers. Many of them had experience with chatbots on websites and few had also experience with automatic voice systems. Some of them gave examples where chatbots helpfully guided them to either the right website, nearest shop or to human agent who could help them better. This shows the limited scope and capabilities that AI still has in terms of problem solving. Several participants believed that AI chatbots are still in early development and lack the intelligence to fully replace human agents. Finnish language understanding is mentioned as a barrier for effective AI service. Several respondents appreciated the immediacy of responses from AI systems. Examples included telecom services, battery replacements, and simple account inquiries. While some found interactions helpful and efficient, others found them repetitive or unsatisfactory

With the question “What did you like or dislike about those experiences?” participants gave many of the same points from previous questions but gave more detailed answers to what they thought of the experience of using AI powered system. Participants’ experiences with AI-powered customer service ranged from negative to positive, though most responses reflected negative or mixed sentiments. On the positive side, some partici-

pants appreciated the fast response times and the constant availability of chatbots, particularly for answering basic or frequently asked questions. Others found AI helpful in organizing their issues before speaking with a human agent, which they believed could save time for customer service staff. Other positives included ease of use and accessibility. Chatbots were valued for their on-demand nature, with no waiting in call queues or in chat.

Many users reported negative experiences with AI-powered customer service. Common frustrations included poor understanding, repetitive interactions, and language limitations. Respondents noted that chatbots and voice assistants often struggle to comprehend complex questions, especially when phrased in unconventional ways. Voice assistants were seen as more prone to misinterpretation due to limited user control over how their speech is understood. A frequent complaint was the need to repeat or rephrase questions multiple times because the bot failed to understand the issue initially. This not only made the process feel inefficient but also led to frustration when the interaction ultimately resulted in being redirected to a human agent and making the AI seem like an unnecessary hurdle. The absence of a human touch, combined with limited capabilities and restricted access to live support, further contributed to users' dissatisfaction.

Table 4 Themes regarding participants' experiences of AI in customer service

Theme	Description	Example quotes
Speed and convenience	Several respondents appreciated the immediacy of responses from AI systems.	ID1: "The answers were instant, so it was good."
Repetitive interactions	Users noticed loops or repeated questions before escalation	ID13: "AI can now answer easy to difficult questions, but it doesn't YET know everything" ID16: "It often leads to the same conclusion: talk to human."

Difficulty with complex inquires	Poor at understanding less structured issues	ID24: “Current implemation of the AI is clearly not ready for real world scenarios”

Next up was question “How did your experience with AI compare to your experiences with human customer service in similar situations?” While most of the experiences with AI were negative or mixed participants still found some usability in AI services. AI was seen as faster than humans responding to simple inquiries, but it still lacked depth and flexibility in addressing complicated issues. Users often felt that AI responses are generic or scripted. Paradoxically even though AI was seen quicker than humans, they still understood context, emotions, and language better, leading to quicker and more satisfying resolutions. However, some participants recognized that AI acts always happy and friendly in conversations while humans may be impacted by their mood and personal life. Still human agents were seen as more creative with their answers and provide more tailored solutions. Participant responses were evenly split between negative, mixed, and positive when it came to preferring AI or human customer service, with preferences largely depending on the nature of the inquiry.

With the question “How important is it for you to know when you are interacting with an AI versus a human? Why?” the emphasis was clearer. Most participants considered it highly important to know whether they were interacting with an AI or a human. Many emphasized that ethical and respectful communication requires AI systems to disclose their identity. Clear identification helps manage fosters trust and prevents confusion or disappointment during interaction. This allows users to adjust their expectations, be more patient with the bot, and know when it’s appropriate to request escalation to a human agent. A few participants noted that as AI continues to advance, distinguishing it from a human will become increasingly difficult. This makes it even more crucial to clearly disclose the use of AI before the conversation begins. While not the majority, a significant number of participants expressed that if their issue is resolved, it doesn’t matter whether they’re interacting with an AI or a human. Some even suggested that not knowing might be preferable, as revealing the use of AI upfront could lead to a negative impression before the conversation begins

Table 5 Themes on the human-AI comparison in customer service

Theme	Description	Example quotes
Humans provide better understanding and solutions	Many respondents report that human agents provide better service, especially for complex or non-standard problems.	ID9: "AI is fine for finding opening hours or order status, but for anything complicated I need to talk to a person."
AI can waste time	Some find that AI interactions add unnecessary steps, since they often still end up needing a human	ID3: "…usually bots take their time to narrow down the problem and give the most basic solutions to common problems…Usually all the human interactions have been fast and we have found the solution faster."
Transparency is highly valued	Most users express that it is very important to know if they're speaking to AI or a human.	ID10: "It is very important. If you are talking to an AI but are under the impression that it's a real person, it can confuse the customer and even cause someone to get upset"

5.2 Expectations of satisfactory customer service

In terms of the Expectations of customer service-category there were two questions. The first one was about participants' expectations of good customer service. The second one was about the biggest frustrations with current customer service experiences. This section focuses mostly on the customer service experience as a whole and tries to find certain relations and themes within the answers. Participants thoughts about good customer service revolved around politeness, professionalism, speed, transparency and human interaction. Positive attitude towards consumer, problem solving orientation and listening

to customer came up in multiple answers. Participants also highlighted empathy and human interaction as key differentiators which relates to personalization theory, which emphasizes emotional connection in service encounters (Blümel, Zaki and Bohné, 2024). Many desired for “a real person” or “human connection” in service. Prior research suggests that customers feel more understood by human agents than AI-based systems, which may lack warmth and empathy even when technically capable for it (Chen and Hu, 2022). While AI can deliver competence, customers still associate sincerity and emotional care with humans. Speed and responsiveness were also appreciated which is a theme supported by (Gans, Koole and Mandelbaum, 2003) who note that service accessibility and efficiency remain critical performance measures in customer service environments. Several participants also expected knowledgeable, competent service agents. In table 6 there are general themes for the answers to the first questions and direct quotes from participants.

When comparing the participants’ expectations of good customer service across demographics such as age, sex and highest educational level, a few patterns can be seen. Females emphasized empathy and emotional connection more than men who focused on politeness and professionalism. Participants with higher education described their expectations more complexly combining professionalism, transparency, and positive emotional experience. Those with lower education focused more directly on speed and problem-solving. Participants with ages from 23 to 26 expressed the most nuanced expectations while younger participants focused on quick service. Sex, age, and education influenced whether participants emphasized emotional, practical, or process-oriented qualities.

Table 6 Themes on the expectations of satisifactory customer service

Theme	Description	Example quotes
Friendliness and politeness	Expect the service to be kind and respectful	ID1: “Friendly, professional and problem-solving skills” ID3: “Politeness, kindness and good spirit attitude”
Efficiency & speed	Value quick responses and short waiting times	ID12: “Customer service should be quick because

		too long waiting times are frustrating”
Professionalism	Desire for knowledgeable and skilled service	ID12: “Good customer service should be knowledgeable”
Problem-solving focus	Expect staff to actively solve problems	ID22: “Tries to help me to solve the case with positive attitude”

For the second question about biggest frustrations with current customer service experiences participants gave circled around themes of slow, fragmented, impersonal, or poorly trained service and the desire for better human interaction and continuity. 13 participants mentioned frustration with long queues and delays before getting help. This shows that it is important for customers that they get service quickly. Repeating information also came up as an issue for many and respondents expressed annoyance at having to explain their issue to multiple agents. This points to poor internal communication systems and fragmented processes. Some also highlighted the dissatisfaction when customer service fails to resolve their issue or lacks competence while others disliked excessive reliance on automated systems or AI, feeling these lack empathy and flexibility.

The issues participants had with needing to repeat themselves multiple times was addressed also by Sands *et al.*, (2022) with how AI can serve as intermediaries to collect and retain customer information, preventing repetition when a case escalates to a human agent. AI systems can often fail maintain contextual memory across interactions, leading to customer frustration (Ferraro *et al.*, 2024) Participants major frustrations with direct quotes are presented in table 7.

Table 7 Themes on the major frustrations with customer service

Theme	Description	Example quotes

Over-automation	Dislike AI or chatbots replacing human interaction	ID6: “AI chatbot answers only very simple questions” ID9: “Too much automation is unpleasant, and I want to interact with humans”
Fragmented service	Needing to explain issue multiple times	ID10: “Having to explain your problem multiple times to different people” ID10: “Ticket disappears because of poor systems”
Unhelpful or unknowledgeable staff	Frustrated by staff lacking expertise or problem-solving	ID17: “service might be rude and unwelcoming to me as a customer”

The participants’ expectations for good customer service closely align with prior research identifying friendliness, professionalism, efficiency, problem-solving, and empathy as core service quality attributes. While customers value competence and speed, their ideal customer service experience involves empathy, care, and human touch.

5.3 Potential benefits and initial thoughts about AI in customer service

This part of the survey explores participants’ initial impressions of AI. The question “When you hear the term 'AI in customer service,' what’s the first thing that comes to mind?” was designed to capture respondents’ immediate associations or perceptions. These responses help identify common concepts, assumptions, or stereotypes related to AI in this context. Additionally, they provide insight into whether participants view AI positively, negatively, or neutrally, as well as indicating their level of familiarity with the topic.

Three different themes stood out among the answers to this question. The first one was balanced optimism with critical thinking. Many participants reflected on the possible upsides with AI implementation, such as AI's speed, availability, and problem-solving ability, but also recognized limitations, especially concerning emotional intelligence and context sensitivity. Some fear AI could worsen social isolation, reducing spontaneous human interaction while others think it is "not ready yet" due to the diversity of human problems. The nuanced tone suggests that these users are technologically knowledgeable but socially aware, indicating a desire for complementarity between human and machine. This theme aligns with research suggesting people appreciate efficiency but do not see AI as fully replacing human agents in complex, emotional tasks (Chen and Hu, 2022; Fui-Hoon Nah *et al.*, 2023). The second theme found among the answers centered around frustration, uncertainty and resistance. There was clear dissatisfaction with the current AI capabilities in customer service. Key frustrations included AI's inability to solve problems directly and explaining the same issue to a bot and then to humans. Feeling stuck with bots with no escalation option to human agents was also pain point among participants. These reflect the findings from Dwivedi *et al.*, (2023) with early adoption tension and a need for better conversational user experience and clearer escalation paths in AI system. The third theme was still a strong preference for human interaction and emotional intelligence, especially for complex or emotionally charged situations. Some note that while AI can be helpful for introverts or basic issues, it often leads to an impersonal experience. There's a strong concern about loss of emotional connection. These themes are presented in table 8 with quotes from the participants.

Table 8 Themes regarding participants' initial impressions of AI in customer service

Theme	Description	Example quotes
Automation & chatbots	AI is linked with chatbots, virtual assistants	ID14: "The first thing that comes to my mind are different kinds of chatbots" ID10: "Robot voice on phone calls tasked to channel the customer to the correct representative"

Limited capabilities	Skepticism about AI's ability to handle complex issues	ID6: "These bring to mind a lackluster experience more often than not. They often lack the required depth to be truly useful"
Efficiency potential	AI could streamline simple interactions	ID4: "…can help with most common questions"; "Makes customer service more responsive"
Risk of dehumanization	Concern about reduced human interaction	ID7: "Replacing customer servants would likely increase loneliness"; "Personally, I like interacting with people"

With "What are your initial thoughts Do you think AI could potentially address any of your previously mentioned issues? If so, which ones?" goal was to explore perceived usefulness or relevance of AI in solving real customer service problems. Does the person see AI as helpful and which problems do they think AI could solve? Here are summarized versions of some of the answers participants gave to these questions.

With this question there were few of the same themes that continued from the previous question "When you hear the term 'AI in customer service,' what's the first thing that comes to mind?". It is evident here that consumers still have a lot of skepticism and doubt about how AI can handle their service request. AI's limitations in emotional and situational awareness were a theme that carried many more negative answers to these questions. The skepticism also comes from consumers' feeling that current AI systems are still underdeveloped and may not always provide reliable solutions. However, many participants also expressed cautious optimism for the possibilities AI could offer in solving their previously mentioned issues. AI is seen as a supplement rather than a replacement for customer service agents if implemented well. Table 9 presents the most evident themes for this section.

Table 9 Themes on the benefits of AI in customer services

Theme	Description	Example quotes
Efficiency improvements	AI can reduce wait times and improve consistency	ID15: “It could be fast for delivering satisfactory information for the customer”
Support for simple issues	AI useful for basic queries	ID8: “AI-driven chatbots could help resolve simple inquiries more quickly”
Potential to complement humans	AI as a supportive tool, not full replacement	ID1: “Could assist in directing customers”; “Shouldn’t be used as customer-facing unit but as supportive tool”

5.4 Concerns and future improvements for AI in customer service

The final questions were designed to elicit participants’ potential concerns regarding the use of AI in customer service and to gather their suggestions for future improvements in the field. The first question "What are your biggest concerns about interacting with AI in customer service?" intended to identify participants’ key apprehensions or negative expectations related to AI-based interactions.

Participants expressed concerns about the integration of AI into customer service. Common themes included data privacy, the risk of misinformation, potential job displacement, and the dehumanization of service interactions. Many emphasized the importance of receiving accurate information, especially when seeking help or answers. There were also significant worries about GDPR compliance, data misuse, and the threat of scams or malicious bots. Since customer service often involves sharing sensitive information participants voiced apprehension about how their personal data is collected, stored, and utilized by AI systems. Users were also concerned that AI might give wrong, outdated, or misleading answers, especially in more complex cases. This can reduce the trust in

AI services on a broader scale but the company's image as well and lead to negative customer experience. A frequent concern among the answers was that increasing AI use will eliminate human jobs and lead to a loss of genuine human contact. Few participants stated that they didn't have any big worries regarding AI and believed that with its rapid advancements it can be as good as humans in the future. The most prominent themes are listed in table 10.

Table 10 Themes on the concerns and challenges for AI in customer service

Theme	Description	Example quotes
Data privacy & misuse	Concerns about how AI handles and stores personal data	ID20: "Complicated problems often require personal information" ID1: "How the data is used and how they interact with customers. How the AI is trained and what data has been used for the training."
Risk of misinformation	AI may give wrong or shallow answers	ID15: "My biggest concerns are that it gives false information or leads to improper actions"
Job loss & dehumanization	AI replacing humans, reducing meaningful human interaction	ID2: "…concern is that real human work positions are lost due to ai doing their job"

With the question "If you could change one thing about your AI customer service experience, what would it be?" goal was to find the most important thing for participants that they wanted to change in their current experience with AI enhanced customer service.

Themes for this are centered around three main points. Easier access to human agents, improving AI's problem-solving capabilities and increasing empathy. The most frequent

suggestion was to allow users to easily switch to a human agent when needed. Participants wanted this option to be clearly available from the start, without being forced through lengthy bot interactions. They also wanted AI to handle more complex or nuanced issues, rather than only responding to basic questions. This can make AI usable in more situations. A better understanding of problems and appropriate solutions is a clear desire. Many expressed a wish for AI to act more empathetically, detecting frustration or urgency from user inputs. AI mimicking human tone or emotional intelligence could also make the experience better for some. Themes are collected in table 11 with some example answers from participants.

Table 11 Themes regarding suggestions for changes in AI enhanced customer service

Theme	Description	Example quotes
Option to talk to a human	Users want faster, easier access to a real person	ID6: “I would make the human agents more easily available. Having the choice right from the start to either interact with the bot or a human would be great.”
Improved problem-solving capabilities	AI should handle more than just simple or generic questions	ID4: “Expand their problem-solving capabilities.”
More empathetic and human-like behavior	Users desire emotionally intelligent responses	ID11: “Would maybe make it more human, friendly smile always helps” ID23: “I would make AI more empathetic to recognize people's emotional states and, for example, frustration from text.”

5.5 Summary of themes

This chapter summarizes the common themes that stood out from the survey responses. Participants shared a range of views on the use of AI in customer service, but several recurring themes were identified across multiple answers. The most prominent themes included the expectation of instant availability, frustration with the current limitations of AI, concerns about the lack of human interaction and emotional intelligence, and a strong desire for greater control and transparency in AI-driven services.

One of the themes that was evident through most of the questions was participants' desire to have instant availability on the services and fast responses from either AI or humans. AI was recognized as often the faster choice despite its shortcomings, and the 24/7 availability was seen as positive, especially for simple inquiries. Speed and efficiency were part of most participants' expectations of good customer service as well as their biggest frustrations with their experiences. Respondents often mentioned that they appreciated not having to wait in queues and valued the immediacy of chatbot or voice assistant responses, which was especially important in fast-paced contexts like e-commerce or telecommunications, where efficiency directly affects customer satisfaction. The theme of efficiency and availability aligns with prior studies which highlighted AI's value in automating repetitive tasks and improving productivity (Dwivedi *et al.*, 2023).

The second theme that appeared on multiple answers in multiple questions was participants' frustrations with AI's current limitations, especially in understanding language and its problem-solving capabilities. Despite recognizing strengths, users frequently expressed frustration when AI failed to understand context, nuance, or resolve more complex problems. This theme also reflects the findings from Dwivedi *et al.* (2023) regarding AI's lack of adaptability and conversational intelligence. While AI has advanced in recent years it still has reached certain levels of complicated problem solving that consumers want from their customer service.

The third theme that many participants emphasized through the survey was human touch and emotional intelligence. According to the answers consumers think that AI lacks empathy and tone sensitivity especially if customer is already frustrated or dealing with personal matters. This was particularly important in scenarios involving complaints, service failures, or emotionally charged topics (e.g., banking problems, healthcare issues). Even though the customer problem may sometimes be solved faster with AI if the experience otherwise is poor it can lead to unsatisfying customer experience. That is of course de-

pendable on the personality of the customer as sometimes they may just want their problem solved regardless of other factors. The theme of needing emotional intelligence from customer service is also recognized in prior research that indicates emotional experience remains a gap in AI service delivery (Larivière *et al.*, 2024).

The final theme that appeared more towards the latter half of the survey was participants' desire for control and transparency. This was evident in multiple answers either directly or indirectly. Participants expressed a strong preference for control over their interaction journey, with a recurring wish to have the option to escalate to a human agent more quickly, and to know upfront whether they are speakin to a bot. If the bot wouldn't allow the customer to change to human agent easily customers often felt frustrated. Regarding the transparency of whether they are talking to human or AI, participants answers varied but most were on the side that it should be disclosed clearly from the beginning. Some noted that AI systems often fail to announce themselves clearly, leading to confusion or unrealistic expectations. User autonomy is also recognized in research by Fui-Hoon Nah *et al.*(2023) which emphasizes the need for AI-human collaboration frameworks. These themes can be found in Figure 5 . These four themes highlight both promises and potential pitfalls of current AI-enable customer service. While consumers value speed and availability, gaps in empathy, problem solving depth and transparency can negatively impact the user experience.

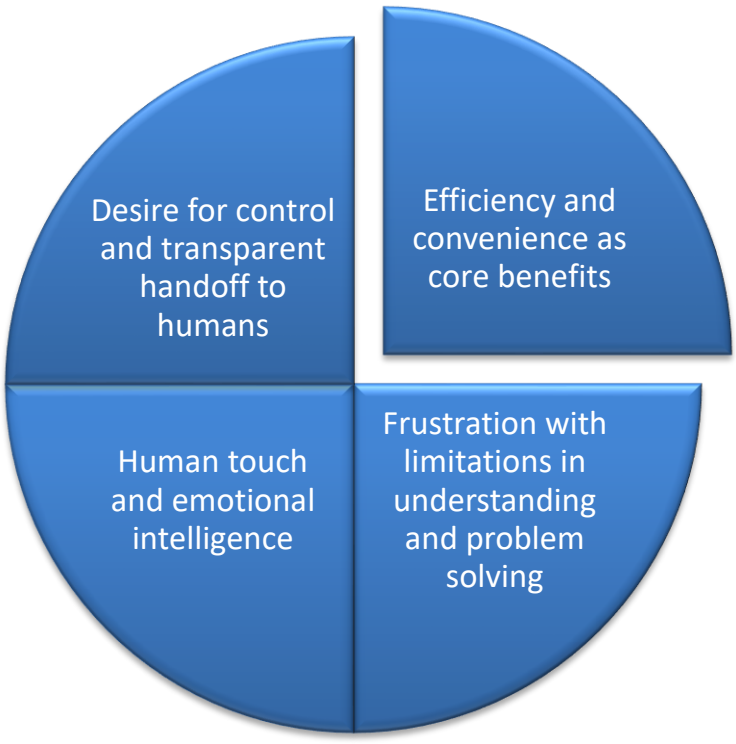

Figure 4 Summarized themes from the survey

Another finding from the responses is that many participants remain unfamiliar with the potential of AI, which may contribute to existing prejudices toward its use in customer service. Lack of awareness could be from limited exposure or past encounters with underperforming chatbots, leading to hesitation in engaging with such systems again. To address this, companies could consider strategies to increase customer familiarity and trust in AI, such as transparent communication about its capabilities and limitations. That way users are more informed and open to its use when they encounter it.

5.6 Supplemenary findings

In addition to developing and synthesizing themes related to the challenges and opportunities, this research also primarily explored how demographic factors, personality traits, and general attitudes toward technology influence perceptions of the benefits, value, and concerns associated with AI in customer service. To be more specific, the analysis examined how demographic factors, such as sex, age, nationality, and level of education influenced participants' perceptions and expectations of AI in customer service. In addition, it will be explored whether participants' general attitudes toward technology and their personality traits had any impact on their views and responses. With the sample size of 24, too general assumptions cant be made but these can provide expandedn information to the 4 themes found among the answers. Female participants reported higher positivity in AI experiences while males showed more varied reponses with some voicing doubts about AI's performance. Younger participants (under 27) tended to report more positive experiences with AI in customer service and most see it comparible to human service. Older participants (over 27) gave more mixed sentiment.

In terms of education, the survey revealed that participants with higher education (Bachelor's or Master's degrees) tended to express slightly greater satisfaction with AI in customer service compared to those with lower levels of education. However, the difference was not substantial. Higher-educated partiocipants also provided the most varied feedback, acknowledging strengths and expressing concerns about trust, accuracy, or comparability to human service. Less educated groups tended to be more neutral or cautiously positive, with few expressing strong opinions. They also had fewre experiences and less knowledge of AI than the higher educated which may have affected the asnwers.

Tech-friendly users were far more likely to report positive experiences and see AI as effective or better than human support. Neutral users shows moderate positive but there

was more apprehesnion from them. With no participants caliming to be highly tech-apprehensive, that aspect can’t be evalueted in this study.

With the 10 personality questions and the Five-Factor-Model we can notice certain connections from the personality groups to how they think of AI-enabled customer service. Participants who rated AI more positively tended be moderatly high in extroverted and open with lower neuroticism and balanced in agreeableness. Those with mixed feelings towards AI had the highest openness, high extraversion and lowest agreeableness suggesting that critical thinkers can be open to new ideas but are emotionally reactive. Participants with neutral or unclear aproach to AI apparead to have moderate to high in both conscientiousness and agreeableness with emotinally stable profiles. In terms of nationality, the majority of participants were Finnish, and the overall lack of diversity in the sample limits the ability to draw meaningful comparisons or identify differences based on nationality. These findings suggest that openness and emotional stability (low neuroticism) are linked with more positive attitudes toward AI, while high neuroticism and critical agreeableness may generate hesitation

6. DISCUSSIONS AND CONCLUSION

The aim of this study was to address two main research questions: What are the benefits of AI in customer service, and what challenges does it present? These questions were explored through a combination of a literature review and a consumer survey, which examined current consumer perceptions of AI applications in customer service. Chapter 5 presented the survey findings, and this chapter analyzes those results in relation to existing literature. Several key insights emerged from the literature review and the thematic analysis of the survey data, highlighting both areas of strong alignment and notable gaps between theory and practice. The conclusions are presented in three parts: Section 6.1.1 which discusses the research contributions, 6.1.2 which presents the practical implications and 6.2. that addresses the limitations and future research agendas.

6.1 Discussions

6.1.1 Research contributions

The results of this study contribute to existing research in the areas of AI's speed and availability, emotional difficulties and transparency. One of the most consistent findings through the survey was the consumers' appreciation for customer service's speed and 24/7 availability. Participants frequently mentioned that chatbots and voice assistants were useful in answering simple questions quickly, such as store hours or delivery status. These responses correspond to the AI's capabilities in processing large amounts of data, generating real-time responses, and operating without fatigue (Dwivedi *et al.*, 2023; Jan *et al.*, 2023a). Automation provided by AI allows businesses to optimize response times and reduce reliance on human labor for routine queries. As highlighted in chapter 3 organizations already use AI tools to reduce call lengths, manage peak loads, and improve key performance indicators like average speed of answer (ASA) (Wang *et al.*, 2023). However, the consumer study revealed that although fast response times are preferred by consumers, they may lead to dissatisfaction if accompanied by negative side effects.

Many participants also expressed frustration with AI's inability to handle complex or emotionally nuanced issues. Theoretical research also showed that even advanced generative AI systems can suffer from hallucinations and poor contextual awareness (Fui-Hoon Nah *et al.*, 2023; Ji *et al.*, 2023) Some also noted that AI systems often loop through preset answers or misinterpret user intent. These same critiques of rigid prompt structures and low adaptability in chatbot design can be found on previous research by Ahn

et al., (2024)**.** **T**his highlights the gap between the promise of deep learning systems and their current implementations in customer service. With new studies and development in technology AI systems have the possibility to evolve continuously.

A major theme that appeared in both the literature review and the survey results was the continued importance of emotional intelligence and human interaction. Participants often preferred human agents for situations requiring empathy or flexibility, especially when they were frustrated. While some generative AI models can simulate emotional tone, they can't yet authentically respond to users' emotions or recognize non-verbal cues which often leads to dissatisfaction (Larivière *et al.*, 2024). Some prior research from Wang *et al.* (2023) and Sands *et al.* (2022) support results from survey which shows that at least still human agents and AI both has place in customer service.

Participants emphasized the importance of knowing whether they were interacting with a human or AI. Having the ability to easily switch to human agents when needed was also appreciated. Participants also worried about receiving inaccurate or misleading information from AI. These concerns align closely with ethical challenges such as the "black box" nature of AI decision-making and lack of accountability. (Zhou *et al.*, 2023; Ferraro *et al.*, 2024) Participants called for customizable interactions and better human-in-the-loop integration, echoing the EPIC model from Kimmerle (2020). EPIC model emphasizes collaboration, transparency, and user empowerment in AI adoption. This also reflects the shift in AI research toward human-centered design, where users' values and autonomy are prioritized (Dwivedi *et al.*, 2023). One notable finding from the survey was that many participants were unfamiliar with AI and its potential. This insight, which has not been prominently highlighted in previous research, presents an interesting opportunity for further investigation, as it may influence how willing consumers are to adopt more AI-driven solutions in customer service.

While participants interacted with AI tools as end-users, their answers indirectly reflected organizational decisions. Many frustrations with AI services can be traced back to organizational shortcomings in AI integration and training, both the AI models and staff. According to Alsheibani *et al.*, (2020) a successful AI adoption requires alignment between business goals, technological capability, and customers' needs. Similarly, small- and medium-sized enterprises may face challenges in AI implementation due to limited resources and lack of quality data (Jan *et al.*, 2023b). These organizational issues can directly relate to customers' feelings about the AI applications in customer service.

6.1.2 Practical implications

This research opens valuable avenues for future researchers and practical implications that organizations can use when evaluating the potential effects of integrating AI in customer service.

Both the literature review and the online consumer survey indicate that the primary benefits of AI in customer service are its rapid response times and constant availability. Participants appreciated the use of chatbots and voice assistants for handling quick and simple inquiries outside of regular business hours, as this reduces customer waiting times for straightforward questions. AI's ability to provide consistent customer experience, unaffected by factors such as mood or fatigue that can influence human agents, was also seen as a positive aspect of its application in customer service. When effectively implemented for repetitive tasks, AI's consistency can enhance the overall customer experience. Organizations should address these simple and repetitive inquiries with AI to reduce human agent workload and improve response speed. These tools should be available 24/7 to increase customer satisfaction during non-business hours. Using AI to organize tickets could also be beneficial so that the most complicated ones go directly to humans. AI is seen mostly as a companion to human agents and that is where participants appreciated its added value. And even though consumers want to differentiate AI service and human agents if AI tools are embedded with human-like characteristics such as warmth and friendliness, they can increase engagement and satisfaction (Ferraro *et al.*, 2023). Participants from the survey were cautious about the potential benefits of AI but could see improvements in the future with the advancement of technology.

Despite its potential, the adoption of AI continues to face significant challenges, including technological limitations, ethical concerns, and the lack of emotional intelligence. One of the main sources of frustration comes from the limitations in current AI capabilities. There is a significant gap between the promise of AI systems and their current implementation in customer service. In the online survey consumers expressed frustration with AI's inability to handle complex or emotionally nuanced issues, often getting stuck in conversational loops or misinterpreting their intent. Many participants expressed skepticism about AI's ability to address their specific problems, highlighting a challenge that organizations must consider to fully leverage the potential of AI.

Another central theme that is challenging AI's adoption is its lack of empathy and human touch. This is especially apparent in sensitive or frustrating situations which can eventually lead to a feeling of dehumanized service and unsatisfied customers. Ahn *et al.*, (2024) discusses that organizations should take cultural, social and linguistic factors into account when designing AI applications for customer service. This is supported by thesis's online survey where participants noted that poor understanding of their own language diminished their experience. A third major concern that rise from both online survey and prior research are ethical concerns. Participants voiced significant concerns regarding data privacy and the misuse of their personal information by AI systems. While lack of empathy was cited as a frustration, organizations can mitigate this by designing AI systems that use emotional tone analysis or escalating difficult cases quickly to human agents.

Consumers' perception of human versus AI in customer service setting doesn't show simple preference for one over the other but is highly conditional and based on a clear trade-off between efficiency and emotional connection. AI is perceived as superior for simple and transactional queries where speed and availability are the main priorities. In these contexts, it is seen as a fast and efficient tool. Human agents are strongly preferred for complex or emotional situations that require creative problem-solving. Participants saw AI as a tool and not a replacement for humans. This is evidenced by the strong demand for transparency in whether they are talking to humans or bot. Consumers Alpo appreciate easy transition to human agent from the beginning, however that might alienate consumers from using AI tools completely. Companies need to balance between these two opposites to satisfy customers nyt still be efficient. The findings from both the survey and the prior research suggest that consumers see a future where AI and humans coexist in customer service. AI can handle preliminary tasks, but a seamless handoff to human agent is essential for resolving complex issues and ensuring a positive customer experience.

The potential benefits and challenges of AI often present a paradox, as noted by Ferraro et al. (2024). Consumers appreciate faster response times but still value the human touch in customer service interactions. Similarly, while they favor more personalized experiences, they express concerns about data privacy. Although AI is a powerful tool, it remains vulnerable to misuse and may struggle to accurately interpret complex customer requests. These factors are, in many ways, contradictory, and organizations must care-

fully navigate how to balance them. However, with ongoing advancements in AI technology and the gradual shift in consumer attitudes toward its use in customer service, these gaps may begin to narrow.

Organizations can begin AI adoption in low-risk, routine service areas to minimize potential customer dissatisfaction and gradually introduce more human-like features to align with consumer preferences for empathic behavior. Training staff to ensure seamless transitions between AI and human agents in complex cases is essential for maintaining customer satisfaction. Continuous monitoring of AI chatbot or voice assistant performance, along with tracking customer satisfaction during and after interactions, can help identify and resolve issues promptly. Tracking metrics such as NPS and average call length after the implementation of AI tools can provide valuable insights into their effectiveness. Investing in the most advanced AI models and developing multilingual, culturally adaptive systems can also significantly enhance support for a more diverse user base. In addition, organizations could pilot AI tools internally before full-scale implementation. This allows for early identification of technical or user experience issues and gives staff the opportunity to provide feedback. A phased rollout can further reduce risks and ensure a more effective integration.

6.2 Limitations and future research agendas

According to Anderson (2017) qualitative research can be evaluated based on following:

- Reflexivity on the researcher
- Communication of methodological awareness
- Member checking procedures
- Ethical issues
- Transferability
- Questions related to sampling strategy and sample size

The goal of this study was to find potential benefits and challenges of AI in customer service and with the conclusions of the study the two core research questions were answered. With these six areas the process and the results of the study can be evaluated. Reflexivity of the researcher refers to the researcher's critical self-reflection on their own background and potential biases, and how these may affect the research process. In

qualitative research, the researcher is considered an instrument of data collection and analysis. (Anderson, 2017) In this study, I recognize that my academic background and prior experience with customer service and different AI tools may shape how I interpret participant responses.

Communication of methodological awareness requires that the research process is clearly documented, demonstrating a logical link between the research question, design, and methods used (Tracy, 2010). Thematic analysis was chosen as the most suitable method for analyzing the open-ended responses in this study. It allowed for identifying recurring patterns related to customer perceptions of AI in service. Thematic analysis excludes more specific suggestions but with the wide scope of research questions they aren't necessarily needed.

Member-checking is a key technique in qualitative research for ensuring the credibility and confirmability of findings by verifying interpretations with participants (Dellinger and Leech, 2007; Wang and Roulston, 2007). It involves sharing data or conclusions with participants to confirm that their views are accurately represented. Due to the anonymous nature of the online survey, direct member checking was not feasible. Participants' answers were carefully preserved through iterative reading and coding to maintain authenticity in interpretation.

Ethical considerations in qualitative research go beyond formal approval and informed consent, extending to situational and exiting ethics that arise from the dynamic relationship between researcher and participant (Tracy, 2010; Miller *et al.*, 2012). These include ethical dilemmas during data collection and the responsibilities researchers hold when ending their engagement with participants (Anderson, 2017). All participants read and agreed to privacy notice and consent form. No identifiable information was collected except for the optional name in basic demographics, and the data was stored securely. Names of the participants we're not referenced in this study.

Transferability in qualitative research emphasizes depth over generalizability and is demonstrated through rich description supported by sufficient data (Walby and Luscombe, 2017) Using direct quotations and detailed analysis of participants' experiences helps convey context, allowing readers to assess the relevance of findings to other settings. On this thesis direct quotes from participants were used to contextualize different themes found among the answers. This way readers can get a better sense into why these themes were selected. Although the study focused on Finnish consumers, the insights into attitudes toward AI in customer service could be relevant in other Western markets with similar consumer behaviors.

Sample selection is a key aspect of qualitative research and should be clearly explained, including the choice of sampling strategy and participant recruitment (Barusch, Gringeri and George, 2011; Mueller and Lovell, 2015) This study used purposive sampling to recruit 24 participants who had interacted with AI-based customer service tools. The initial target was 20–30 participants, and 24 was deemed sufficient to reach thematic saturation. While a larger sample might have provided broader insights, it would have been difficult to analyze in depth, and a smaller one could have limited theme identification. Participants' experience with AI varied from brief chatbot use to more extensive interaction, offering a range of perspectives. The sample was relatively small and based on voluntary responses, which may limit generalizability. All participants were under 40 and mostly Finnish, which may have also influenced the results, particularly due to language-specific challenges AI may face in Finnish.

Even though chatbots have been around for a while, integrating AI into a substantial part of customer service is still a relatively new thing. Even during this research companies like Google or OpenAI released new or updated language models capable of even more complicated tasks. Google announced its new model Veo3 which can produce video with voices and sounds (Google, 2025). This brings opportunities for companies to utilize such technologies as customer support or chatbots. Continuously researching new technologies can be helpful to find out what customers gravitate towards the most and continue to evolve those. Also doing the same kind of consumer study but with larger populations and wider ranges of age and nationality could provide a more extensive and deeper understanding of AI's role in customer service. Doing research on consumers' immediate thoughts after having customer service experience can also be worth looking at as that can give more honest answers when the situation is recent.

One of the future research possibilities could be to collect and analyze data from the AI service interactions rather than ask consumers about their experiences. The time customers spend either on the phone with AI voice assistant or on chat with chatbot can give extensive knowledge on how the system works. Customers' tones in writing or speaking can also be recognized and analyzed to find out when certain emotions appear in the conversation. This could also be done in a test environment with, for example, cameras and heart rate sensors to help sense customers' feelings more accurately. There are already companies using facial expression analysis for data-analysis (Noldus, 2025) Cross-cultural dynamics can also be interesting section to do future studies for as according to Ahn *et al.* (2024) customer perceptions of AI vary significantly across regions. Understanding these variations could guide the development of culturally adaptive

AI interfaces that are more universally effective. Consumers' familiarity with AI and its capabilities emerged as relevant issues during this study and interesting future research could include examining how structured onboarding programs or consumer education influence the adoption and perception of AI services, particularly among different demographic segments. The longitudinal effects of AI in customer service is also one possible research opportunity to consider. While this study captured consumer sentiment at a single point in time, future research could track how repeated interactions with AI shape satisfaction and brand loyalty over extended periods.

This study focused more on the consumers' acceptance and feelings towards the increasing AI adaptation in customer service. The organizational aspects are also important when considering the benefits and challenges of implementing AI tools as part of customer service. One research possibility is to interview management of organizations with customer service. This could give insight into strategic motivations and operational challenges associated with adopting AI technologies. Conducting surveys or interviews with customer service employees who use AI in their daily work could provide valuable insights into how these technologies impact their work environment, job satisfaction, and overall performance. Since employee well-being and engagement often directly influence the quality of customer interactions, understanding these effects is essential for evaluating the broader implications of AI integration in customer service.

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APPENDIX A. THE SURVEY QUESTIONS

Session A1: Main open-ended questions

Expectations of customer service

1. What do you expect from good customer service?

2. What are your biggest frustrations with current customer service experiences?

Initial thoughts and the potential impact of AI

1. When you hear the term 'AI in customer service,' what's the first thing that comes to mind? What are your initial thoughts?

2. Do you think AI could potentially address any of your previously mentioned issues? If so, which ones?

Experiences with AI interactions

1. Can you describe your experiences with AI-powered customer service, such as chat-bots or automated phone systems? Please give me some specific examples.

2. What did you like or dislike about those experiences?

3. How did your experience with AI compare to your experiences with human customer service in similar situations?

4. How important is it for you to know when you are interacting with an AI versus a human? Why?

Concerns and future improvements for AI in customer service

1. What are your biggest concerns about interacting with AI in customer service?

2. If you could change one thing about your AI customer service experience, what would it be?

Session A2: Demographic and Background Information of Participants

Demographic questions

1. Name

2. Age

3. What is your sex?

4. What is your nationality?

5. What is your highest educational level?

6. What is your study subject?

General experience of using technological products

Please read the following statements related to your general experience of using technological products and indicate to what extent you agree with them. Technological products include but are not limited to computers, mobile phones, applications, IoT devices and others. For the statements below use 1-5 likert scale 1 = Strongly disagree 2 = Disagree 3 = Don't know 4 = Agree 5 = Strongly agree

1. I feel apprehensive about using technical products/systems

2. It scares me to think that I could lose a lot of information using technical products/systems by hitting the wrong key

3. I hesitate to use technical products/systems for fear of making mistakes I cannot correct

4. Technical products/systems are somewhat intimidating to me

Personality traits

For the statements below use 1-5 likert scale 1 = Strongly disagree 2 = Disagree 3 = Don't know 4 = Agree 5 = Strongly agree

1. I see myself as extraverted, enthusiastic.

2. I see myself as critical, quarrelsome.

3) I see myself as dependable, self-disciplined.

4) I see myself as anxious, easily upset.

5) I see myself as open to new experiences, complex.

6) I see myself as reserved, quiet.

7) I see myself as sympathetic, warm.

8) I see myself as disorganized, careless.

9) I see myself as calm, emotionally stable.

10) I see myself as conventional, uncreative.