AI Revolution in IT: Exploring How Companies Embrace Change and Transform the Industry

Sakhi Hashmat Khalil

Haaga-Helia University of Applied Sciences

Degree Programme in Business Information Technology

Bachelor's Thesis

2024

| **Author(s)** |
| Sakhi Hashmat Khalil |

| **Degree** |
| Bachelor of Business Administration, Degree programme in Business Information Technology |

| **Thesis Title** |
| AI Revolution in IT: Exploring How Companies Embrace Change and Transform the Industry |

| **Number of pages and appendix pages** |
| 40 + 6 |

This research-based thesis examines the integration of artificial intelligence (AI) in the IT sector, exploring its benefits, challenges, and environmental impact, along with the future of human skills in an AI-driven landscape. The research employed a mixed-methods approach that included a literature review, a survey, and interviews with IT professionals. The study aims to understand how AI is reshaping the IT industry.

The introduction outlines objectives and key concepts, followed by a theoretical framework defining AI, its history, and relevant literature. The research methods chapter explains the chosen methodology, data collection, processing steps, limitations, and ethical concerns. The next chapter presents the findings from the survey and interviews. The discussion chapter explores, evaluates, and concludes the findings.

The study concludes that IT professionals generally view AI integration positively, anticipating improvements in productivity and efficiency. The organizations consider cognitive skills, particularly creative thinking and emotional intelligence, irreplaceable. Despite significant awareness of AI's high energy consumption, there was optimism about its potential to improve environmental sustainability. The majority of companies are investing in training and reskilling their employees for the AI era, although there are significant gaps in structured training. Despite the recognition of AI's benefits like increased productivity and innovation, concerns about data privacy, bias, and ethical issues continued to persist.

The study provides valuable insights for IT companies, HR professionals, policymakers, and researchers, aiding them in navigating AI integration and developing strategies to maximize benefits while mitigating risks. Moreover, the findings are helpful for students and professionals in the IT field to gain an overview of companies' expectations and approaches regarding AI.

Table of contents

1   Introduction

In the past few years, there has been a significant shift towards artificial intelligence (AI) in the IT field, particularly since 2022, when the world witnessed the capabilities of generative AI. The concept of using natural language processing technologies (NLP) to chat with a generative pre-trained model (GPT) by OpenAI, which can generate new output based on input, has been a breakthrough technology. The IT field has realized that most of routine tasks can be automated with AI, potentially replacing human skills.

The rise of generative AI has led to increased adoption of AI by businesses aiming to remain competitive and innovative. However, the integration of AI rises concerns about the potential replacement of human jobs, especially in routine tasks. This situation prompts a critical assessment of the benefits and challenges AI brings to organizations in the IT sector. Moreover, it rases questions about which human skills remain desired despite AI advancements.

The research aims to understand the benefits and challenges of AI adoption by IT companies, examine workforce preparation strategies for AI, and explore organization stances on the environmental impact of AI. The objectives of the research are:
-   What are the attitudes of IT companies towards AI integration?
-   What human skills will still be irreplaceable by AI?
-   How aware are companies about environmental impact of AI?
-   How are companies preparing their workforces for the AI era?
-   What are the perceived benefits and challenges of AI integration?

This study employs literature review, surveys, and interviews to provide a comprehensive overview of AI integration in businesses. The literature review will analyze existing studies on AI usage in the IT sector. Surveys will collect numerical data on trends, perceptions, and AI adoption levels, offering a general picture of AI in the industry. Interviews with IT professionals will provide personal insights and experiences beyond numerical data.

This research benefits various stakeholders in the IT sector and beyond. IT organizations can gain insights into AI adoption to inform their strategies. HR professionals and corporate trainers can develop programs to enhance crucial human skills. Policymakers and regulators can create responsible AI guidelines. Academics and researchers can further explore AI's impacts. IT professionals and students can understand companies' attitudes toward AI, learn essential skills to acquire, and enhance their career resilience.

1.1 Key concepts

Information Technology (IT): IT involves the use of computers, storage systems, networks, and other physical devices to create, process, store, secure, and exchange electronic data (Shulze 2024).

Natural Language Processing (NLP): A branch of AI that focuses on the interaction between computers and human language, specifically how to program computers to process and analyze text and spoken words (Nadkarni, Ohno-Machado, & Chapman 2011).

Creative Thinking: Bailin (1987) describes creative thinking as an imaginative and inventive process that goes beyond existing frameworks to produce valuable and effective ideas.

Emotional Intelligence (EI): EI is the ability to recognize, understand, and manage one's own and others' emotions, using this awareness to guide thinking and actions (Salovey & Mayer 1990, 189).

GitHub Copilot: Kalliamvakou (7 September 2022) defined GitHub Copilot as an AI tool developed by Microsoft, which assists in programming by providing code suggestions based on natural language prompts.

AI Ethics: AI ethics involves the study and application of ethical principles, values, and guidelines in AI technology's development, deployment, and use. It addresses the moral and societal implications of AI systems, aiming to ensure they are created and utilized responsibly and beneficially for society (Dixon 2024).

Machine Learning: A subset of AI focusing on the development of systems that can learn from and make decisions based on data (Brown 2021).

AI Adoption: This term refers to the integration and utilization of AI technologies within various sectors, indicating how extensively these technologies are being employed in practical applications (Madan & Ashok 2023).

AI Labor Demand: Refers to the requirement for AI skills in the job market, as indicated by job postings and recruitment trends (Alekseeva, Azar, Giné, Samila & Taska 2021).

2 Theoretical Framework

This provides a comprehensive overview of the history, and concepts of Artificial Intelligence (AI), exploring its definitions, historical milestones, generative capabilities, attitudes towards its integration, the enduring relevance of human skills, its environmental impact, and the benefits and challenges associated with its adoption in the IT sector.

2.1 Artificial intelligence

Artificial intelligence (AI) is a complex field with various interpretations, primarily focusing on enabling computers and digital devices to mimic human-like capabilities. According to IBM (s.a.), AI empowers these devices to perform tasks such as learning, reading, writing, communicating, seeing, creating, playing, analyzing, making recommendations, and more, close to human actions. Similarly, Microsoft (s.a.) defines AI as the ability of a computer system to emulate human cognitive functions, including learning and problem-solving, highlighting the technology's aim to replicate human intellect and reasoning in digital form.

Rouhianen (2020, 3) provides a more detailed perspective, explaining that AI allows machines to learn from data through algorithms, enabling them to make decisions in a human-like manner. Rouhianen points out that AI can analyze data quicker than humans, without needing breaks, and makes fewer mistakes, showing that AI is efficient and dependable in handling information. These different definitions show that AI is complex and serves as a link between human thinking and technology.

2.1.1 History of artificial intelligence

The concept of artificial intelligence (AI) originates from the Alan Turing question, "Can Digital Computers Think?" in his 1950 publication "Computing Machinery and Intelligence". Turing introduces a test that could assess whether a computer could mimic a human. If an interlocutor cannot distinguish the computer from a human during a conversation, that means the computer passed the test. This initiated the concept of creating computers that can think and communicate like humans. (Turing 2009)

In 1956, at the Dartmouth Conference, John McCarthy and other experts in computing science and cognitive science established the fundamentals of AI as a field (McCarthy, Minsky, Rochester & Shannon 2006). In 1967, Frank Rosenblatt created the first neural network-based computer capable of learning through trial and error. computer, Mark 1 Perceptron. In the 1980s, AI started using a neural network backpropagation algorithm to train itself (IBM s.a.).

In 1997, a pivotal event in AI history happened: grandmaster Garry Kasparov, who was the world champion, lost in chess to the IBM supercomputer (Staley, 2000). This boosted interest in AI. Other factors also advanced the speed of AI's evolution, such as the rise of the internet, which facilitated the era of big data and cloud computing (Manyika et al. 2011).

These developments further drive AI advancements, especially in deep learning and generative AI technologies (Goodfellow et al. 2014). The speed of AI development has increased over time, and more private companies have started investing in the research and development of AI. Before 2014, the most advanced machine learning models were released by academia, but in 2022, only three of the 32 significant machine learning models were released by academia (Stanford University 2023, 23). The survey findings reveal that 40% of the total 1684 participants state that their organizations will increase their investment in AI due to advancements in generative AI (Chui, Yee, Hall, Singla & Sukharevsky 2023).

2.1.2 Generative artificial intelligence

Generative AI is AI that can generate new content based on input. The input and output can vary from text, images, sounds, animation, 3D models, or other types of data. Generative AI models employ neural networks to identify patterns and structures in existing data to generate new and original content. (Nvidia, s.a.)

The analogy that best describes generative AI is that a trained model that has consumed a large amount of data can generate new data based on input. As the teacher teaches a child patterns and structures and then asks them to create a new one with specific requirements.

Various generative models exist, but the generative AI technology has changed people's perception of AI is chatbot ChatGPT by OpenAI that was introduced in 2022. The hype around AI has reached the peak and boosted development within the IT sector (Stanford University 2023, 80). The success of ChatGPT was because using natural language processing allowed people around the world to see the capabilities of generative AI by giving textual input and get generated textual output. The ChatGPT-3 model was trained on around 45 terabytes of text data (McKinsey & Company 2024).

2.2 Attitude towards AI integration

A survey conducted by Insight Enterprises (2024) found that 41 % of the 604 employees were curious about generative AI at work, while 35 % were cautious. Moreover, 75 % of the employees believe that AI-powered devices will help their organization stay competitive, and 73 % expect

devices empowered with AI improve their productivity. These numbers show that employees have high expectations of generative AI at work and hold positive views about it.

While employees might be excited about generative AI, what attitude do companies have toward AI and generative AI? A report from Solita (2023, 6) shows that 54 % of the top 500 companies in Finland believe AI has little or no impact on their business. Only 17 % of companies admitted to already using generative AI, while 83 % of large Finnish companies have not yet adopted it. Remarkably, 75 % of companies that are already using generative AI report a significant impact from AI. Additionally, 44 % of IT managers in Finland admitted that they have not used generative AI at work at all. Only 5 % of respondents reported indifference towards generative AI, while 35 % felt hopeful, 39 % felt enthusiastic, and 65 % felt curious.

2.3   Human skills in the AI era

AI evolves rapidly, and new models of AI has been reshaping the Industry. Generative AI has been a hot topic for discussion and 19 % of workforce can automate their 50 % of task by AI (Eloundou, Manning, Mishkin & Rock 2023). Moreover, businesses expect Generative AI to reduce their costs of business operations (Chui, Hall, Mayhew, Singla & Sukharevsky 2022).

Recently Open AI announced Sora AI model that will be able to generate high quality videos from given prompt that will shake the world of 3D graphic designers, animation designers and editors (OpenAI 2024). The game industry will be able to boost the speed of game development with Sora AI. Previously ChatGPT-3 with capacity generating codes with prompts and integration of it as tool to GitHub Copilot had significance impact at the software engineers work. The result of survey showed that 88 % of developers felt more productive with Copilot. Moreover, the task that was given to developers with Copilot took 56 % less time than for those without Copilot. (Stanford University 2023, 208.) That means that Copilot makes work of software engineers already Human-AI collaborative and reduces the requirement for many developers. The DALLE-2 version of generating pictures from text-to-image AI has also shown that a lot of human skills in Photoshop and illustration can be replaced by its capabilities (Stanford University 2023, 75).

A survey of 803 companies employing over 11.3 million individuals indicates that over 75 % of these companies intend to integrate big data, cloud computing, and AI technologies within the next five years. Furthermore, it is anticipated that 42 % of business tasks will be automated by 2027, primarily due to advancements in AI. (World Economic Forum 2023, 5-6.)

Organizations forecast job creation and displacement from 2023 to 2027. The IT sector is expected to see the highest job creation rates in AI and machine learning specialties, as well as in information security. Conversely, software testers are predicted to experience the highest rate of job

displacement (World Economic Forum 2023, 30). In Figure 1, the result of the survey shows how businesses expect skills to increase or decrease in importance in 2023–2027.
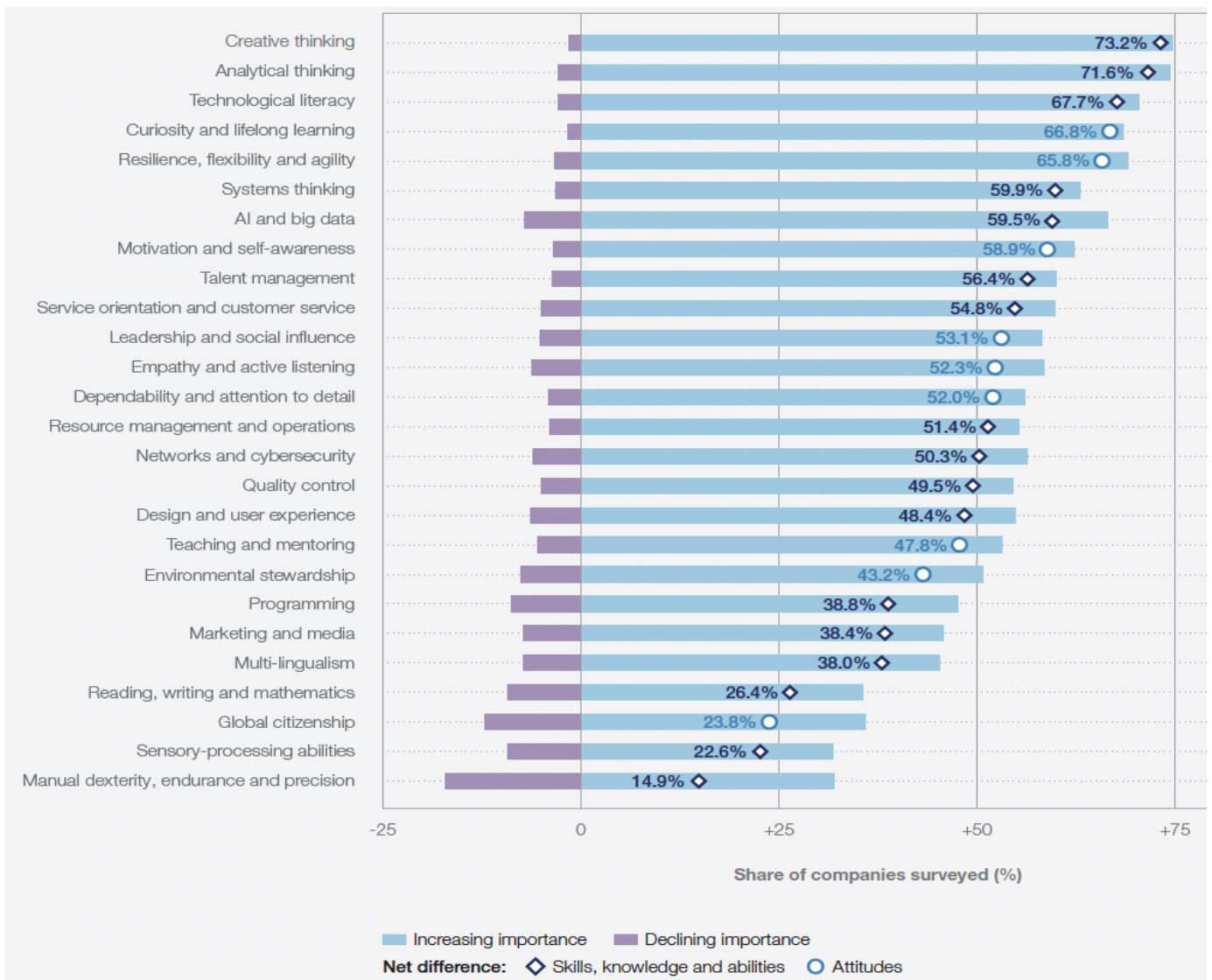
Figure 1. Survey result showing the importance of skills (World Economic Forum 2023)

Figure 1 shows cognitive skills on the rise, which indicates organizations are focused on the skills that help to resolve complex problems in the workplace. That indicates that human-AI symbiosis might be the goal of organizations in the future. AI currently lacks the ability to replicate cognitive human skills in the decision-making process and requires human evaluation, particularly in ethical considerations (Jarrahi 2018).

The organizations have their strategy strategies for 2023-2027 and most of investing in learning and training on the job and automation processes as it shown in Figure 2.

Figure 2. Workforce strategies of businesses 2023-2027 (World Economic Forum 2023)

The results in Figure 2 lead to the conclusion that the majority of companies are looking for certain skills, are ready to invest in reskilling and training their workforce and are also enthusiastic to automate business processes with the help of AI.

2.4   Environmental impact of AI

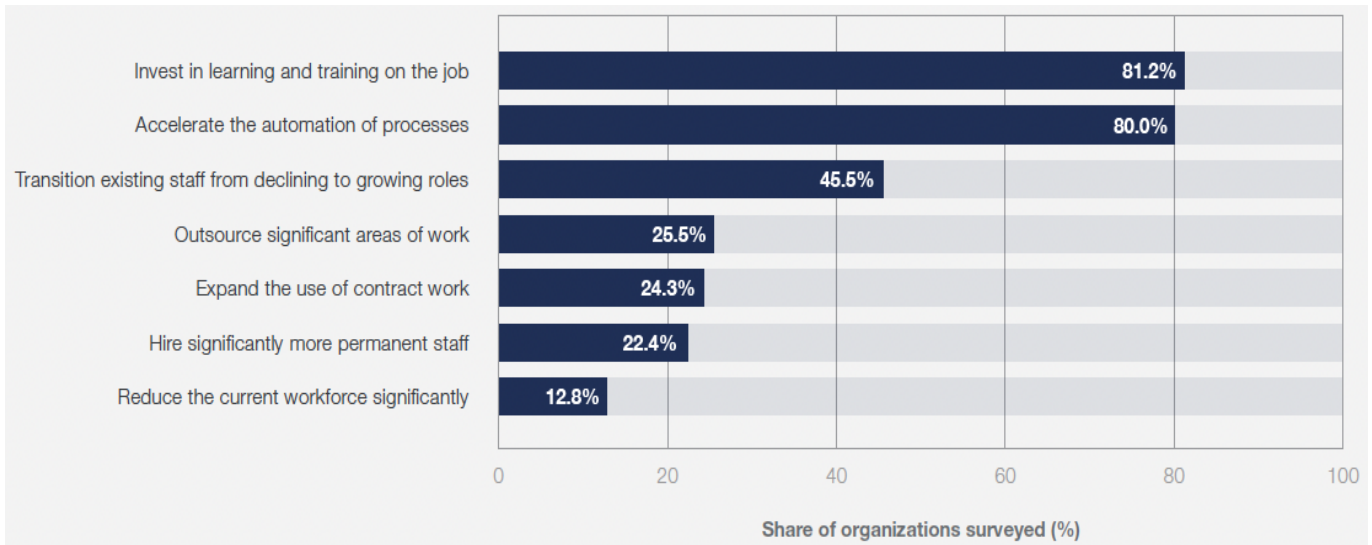AI technologies are evolving quickly, and models require extensive amount of data processing, involving significant energy and power usage. The carbon emissions from AI systems depend on factors like model size, data center energy efficiency (power usage effectiveness, or PUE), and the energy source's carbon intensity. PUE measures data center energy efficiency, with higher values indicating less efficiency. (Stanford University 2023, 120.) Comparing four large language models Table 1 shows us that GPT-3 emitted the most carbon, significantly more than Gopher, OPT, and BLOOM.

Carbon dioxide (CO_2) emissions contribute to global warming and negatively impact the environment (Yoro & Daramola 2020). Carbon dioxide emissions significantly drive climate change, leading to environmental and societal issues. Elevated CO_2 levels increase global temperatures, causing severe heatwaves and the melting of polar ice caps, which contribute to rising sea levels. Climate change also amplifies extreme weather events like hurricanes, floods, and droughts due to a warmer, moisture-laden atmosphere. Additionally, ocean acidification from absorbed CO_2 harms marine life by dissolving calcium carbonate structures. (European Commission s.a.)

Table 1. Environmental impact of machine learning models (Stanford University 2023, 120)

Model	Number of Parameters (billion)	Datacenter PUE	Grid Carbon Intensity	Power Consumption	CO2 Equivalent Emissions	CO2 Equivalent Emissions x PUE
Gopher	280 B	1,08	330 gCO2eq/kWh	1,066 MWh	352 tonnes	380 tonnes
BLOOM	176 B	1,2	57 gCO2eq/kWh	433 MWh	25 tonnes	30 tonnes
GPT-3	175 B	1,1	429 gCO2eq/kWh	1,287 MWh	502 tonnes	552 tonnes
OPT	175 B	1,09	231 gCO2eq/kWh	324 MWh	70 tonnes	76.3 tonnes

The GPT-3 model produced 502 tonnes of CO_2, equivalent to the contents of 500 fire extinguishers per tonne. To offset one ton of carbon emissions, about 50 trees are needed to grow over a year (Climate Neutral Group s.a.). Table 1 illustrates GPT-3's emissions, while Figure 3 compares this to the emissions from a single passenger flying 502 times between New York and San Francisco, highlighting its significance.
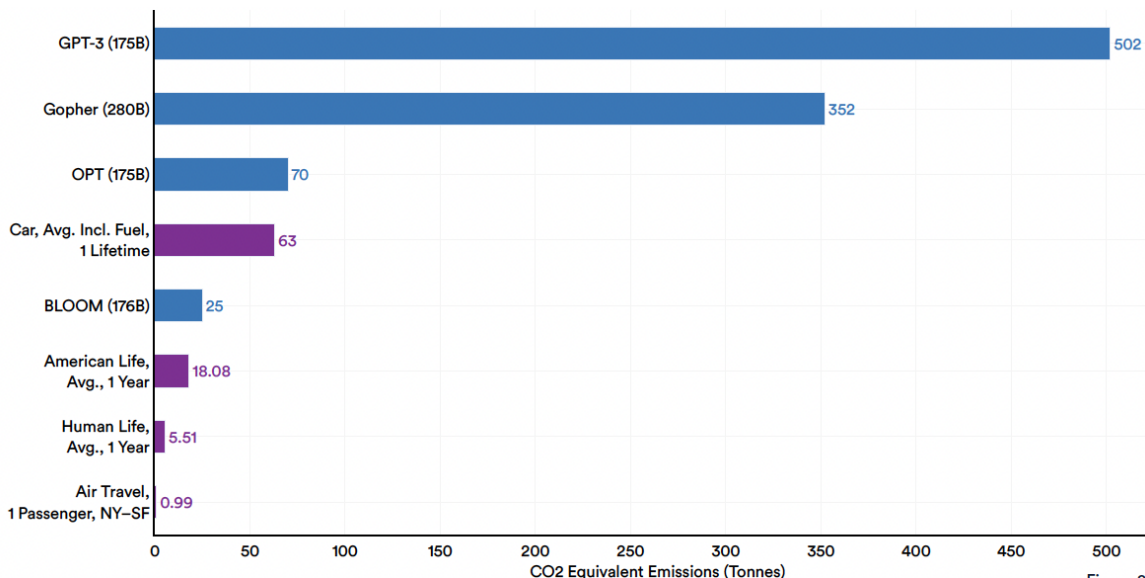
Figure 3. CO2 emissions in tonnes of machine learning models and real-life examples (Stanford University 2023, 121)

Training AI systems is usually energy-intensive, but they can also enhance energy efficiency. In 2021, DeepMind's experiment with the BCOOLER system in Google's data centers showed that it could reduce energy use by 12.7 % over three months. BCOOLER managed this while keeping the cooling within preferred comfort levels. (Stanford University 2023, 122.)

AI has the potential to be good for the environment by optimizing resource use and improving efficiency, particularly in sectors like agriculture. However, it also poses risks such as algorithmic biases and environmental impacts. The overall effect of AI on the environment depends on how it's developed, used, and governed, balancing innovation with sustainability considerations. (Galaz et al. 2021.)

AI has the potential to significantly accelerate the development and implementation of sustainability solutions, optimize complex environmental systems, and empower the sustainability workforce. By harnessing AI's capabilities, we can enhance the measurement, prediction, and optimization of processes essential to achieving net-zero emissions and fostering a nature-positive future. Microsoft advocates for substantial investment in AI for sustainability, the development of digital and data infrastructures, the minimization of AI operations' resource use, the advancement of AI policy principles, and the building of workforce capacity. They underscore the importance of collaborative efforts among businesses, governments, and civil society to unlock AI's transformative potential responsibly and ethically, ensuring it contributes effectively to the global race toward net-zero emissions and a sustainable future. (Smith & Nakagawa 16 November 2023.)

2.5   AI integration benefits and challenges

Adopting new technologies, including generative AI, presents both benefits and challenges. Generative AI is projected to reduce costs for businesses, and organizations claim to perceive benefits from AI adoption. However, a significant problem is AI-related recruitment procedures (Chui et al. 2022).

AI presents both opportunities and challenges for organizations. While it can automate tasks and support decision-making, its adoption is still relatively new, especially in large enterprises. Many companies haven't yet seen substantial returns on their AI investments because their projects are still experimental. Common challenges include deployment difficulties, a shortage of AI talent, and the necessity for robust management and governance structures. To overcome these obstacles, organizations should promote a culture of innovation, retrain existing staff, and develop clear AI strategies to ensure ethical and effective integration. Addressing these issues is crucial for leveraging AI's transformative potential within organizations. (Benbya, Daveport & Pachidi 2020.)

Microsoft (2023) plans to use AI not just for automation but also to enhance productivity and drive innovation. The company's stance regarding AI integration is to get its workforce ready for the AI era by boosting creativity, encouraging collaboration between AI and employees, and building AI skills. This approach is reshaping work dynamics and skill requirements, highlighting AI's role in lifting the burden of digital debt and fueling innovation.

Google's AI Opportunity Agenda takes a comprehensive approach to maximize AI benefits. It involves investing in AI infrastructure, developing an AI-ready workforce, and increasing AI accessibility and adoption. The goal is to ensure AI benefits many people by promoting collaboration among industry, civil society, and policymakers to prepare for AI-driven job changes. The agenda also highlights the importance of AI in education, flexible immigration for AI experts, and creating a safety net with tailored skilling programs. (Walker 14 November 2023.)

Microsoft 365 Team (2023) states that AI advantages are at the workplace is Automation, Advanced analytics, Intelligent chatbots, AI companions. On the other hand, generative AI brought a lot of ethical challenges as bias, fairness and misuse. Based on the AI, Algorithmic, and Automation Incidents and Controversies (AIAAIC) database, which records cases of ethical misuse of AI, there were 26 more incidents in 2021 compared to 2012 (Stanford University 2023, 129). Moreover, the AI is an easy trick to give you harmful data; it also does not always provide factual data, and the data that it consumes for training might contain biases that will be inherited by the AI (Stanford University 2023, 130–167).

3 Research Method

This chapter justifies the choice of research methods, the data collection process, the data analysis process, validation and reliability, and limitations.

3.1 Justification of research method

According to Creswell (2003, 13-18), quantitative research employs strategies that focus on identifying the relationships of cause and effect, narrowing down to particular variables and forming hypotheses, as well as using tools such as measurement and observation to validate theories. In contrast, qualitative research methods emphasize understanding the diverse interpretations of personal experiences, which are seen as shaped by societal and historical contexts, with the goal of uncovering a theory or pattern. Mixed methods research integrates both approaches, aiming to address issues by considering a variety of perspectives and focusing on results and practical problems.

The mixed-methods research was chosen due to its significant advantages, as it involves a sophisticated methodology using both qualitative and quantitative data. Moreover, this method provides insights beyond the quantitative and qualitative data and offers the possibility of multiple publications. (Creswell 2021, 2.)

The thesis adopts an explanatory sequential mixed methods design, which involves first collecting quantitative data and then explaining the results with qualitative data. The qualitative data helps understand unusual or surprising quantitative responses. (Creswell 2021, 7.)

3.2 Data collection and storage

The study will categorize data collection methods into qualitative and quantitative to align with the mixed methods approach. Literature reviews in qualitative and quantitative research differ significantly in methodology and focus. Qualitative reviews prioritize interpreting diverse study results to form comprehensive themes, emphasizing context and depth. Conversely, quantitative reviews use systematic and statistical methods to combine findings from multiple studies, focusing on trends and inconsistencies through mathematical averaging. These approaches, while distinct, are complementary, offering a balanced synthesis of existing research. Understanding these differences is essential for a thorough and nuanced review of the literature in any academic field. (Pan 2017, 1-2)

The literature review will be used in the study to collect quantitative data from industry reports, annual company reports, and a report on a global survey. Also, a literature review will help collect qualitative data from expert opinions and company predictions for the near future.

A survey is an effective method for collecting quantitative data from IT professionals. According to Fink (2003, 1-2), a survey is a method of gathering information from people in order to describe, compare, and explain their knowledge, attitudes, and behaviors. Due to advancements in technology and a lack of time, the most suitable method for collecting quantitative data is an online questionnaire survey (Ball 2019).

Google Forms was used for the online questionnaire, a platform provided by Google to conduct surveys anonymously. Closed-ended questions with multiple-choice answers, targeting professionals in IT companies, were included in the questionnaire, as shown in Appendix 1. These closed-ended questions were designed to identify patterns and gather quantitative data. Participants were informed that their data would remain anonymous, would not be saved, and would be kept confidential, in accordance with ethical guidelines.

Semi-structured interviews effectively collect qualitative data by combining predetermined questions with the opportunity for open-ended responses. This methodology allows for in-depth exploration of participant perspectives, making it suitable for examining complex issues within social sciences and health studies (DiCicco-Bloom & Crabtree 2006; Galletta 2013, 20-44). It facilitates a deeper understanding of human behavior and decision-making by allowing respondents to express their thoughts and experiences beyond structured responses (Brinkmann 2014).

The interview questions presented in Appendix 2 are designed to align with the survey questions to gain a deeper understanding of the survey respondents' answers. Interviews will be recorded to ensure accurate transcription, analysis, and summarization. A consent form, which is a crucial component, is presented in Appendix 3 This form will be sent to interviewees before the interview to inform them about the interview's purpose and the process for withdrawing if they decide they do not want their interview to be included afterward.

The gathered data will be stored in compliance with the European Union (EU) General Data Protection Regulation (GDPR) principles. The GDPR principles require that personal data is processed lawfully, fairly, and transparently; collected for specified, legitimate purposes; limited to what is necessary; kept accurate and up to date; stored only as long as necessary; and protected with appropriate security measures to ensure integrity and confidentiality. (Goddard 2017.)

3.3   Data analysis

The analyses will follow the explanatory sequential design pattern. The approach starts with collecting quantitative data though random sampling technique. The aim is to capture broad perspective of the subject of study. This phase utilizes online questionary survey to gather statistically important information.

Following the quantitative analysis, the study will transition to qualitative data collection, focusing on gaining deeper insights into the initial findings. This will involve conducting semi-structured interviews with purposely selected participants, chosen based on specific criteria identified from the initial quantitative results. This purposeful sampling aims to explore the nuances and underlying factors that quantitative data alone cannot reveal.

The final phase of the analysis, interpretation, involves an integrated approach where the qualitative findings are used to elucidate and add depth to the quantitative results. This stage is crucial as it allows for a comprehensive understanding of the research question, bridging the gap between numerical data and human experience. The qualitative data will provide context and explanations for the patterns and relationships identified in the quantitative phase, enabling a more holistic understanding of the research topic (Creswell, 2021, 92).

3.4   Validation and reliability

To ensure the study's quality and reliability, triangulation and peer review methods will be used in the research process.

Triangulation enhances validity by cross-verifying data from multiple sources (Moon 2019). The method will help validate data for the literature review and reduce bias. Several sources of data would verify the data's validity and make it more reliable.

Peer review involves experts evaluating a scholar's work before publication to ensure its integrity and relevance, thereby upholding academic standards and community credibility (Newton 2010). According to educational instance guidelines, the study will be reviewed by another student and an advisor, which will help improve the quality of the research.

3.5   Limitation

The study acknowledges several limitations. First, the findings' generalizability is restricted by the specific contexts and samples chosen, limiting their applicability across diverse IT companies and over time. Second, the rapid evolution of AI technologies may render the findings quickly outdated, necessitating ongoing research. Third, data accessibility issues, due to proprietary and confidential information, may lead to incomplete analyses. Despite these constraints, the research aims to offer valuable insights into AI integration within the IT industry, emphasizing the need for continuous study in this dynamic field.

Despite these constraints, the research aims to offer valuable insights into AI integration within the IT industry, emphasizing the need for continuous study in this dynamic field.

4 Results and Findings

In this chapter, the results and findings of mixed-methods research are presented.

4.1 Survey results

The quantitative research involved a survey of 35 IT specialists from diverse companies and backgrounds. The survey was distributed through various channels and comprised statements that respondents rated on a scale of 1 for 'strongly disagree' to 5 for 'strongly agree', and 3 for 'neutral'.

4.1.1 Attitudes towards AI Integration

Respondents rated three key statements in the section on attitudes towards AI integration, and Figure 4 presents the results of the survey.
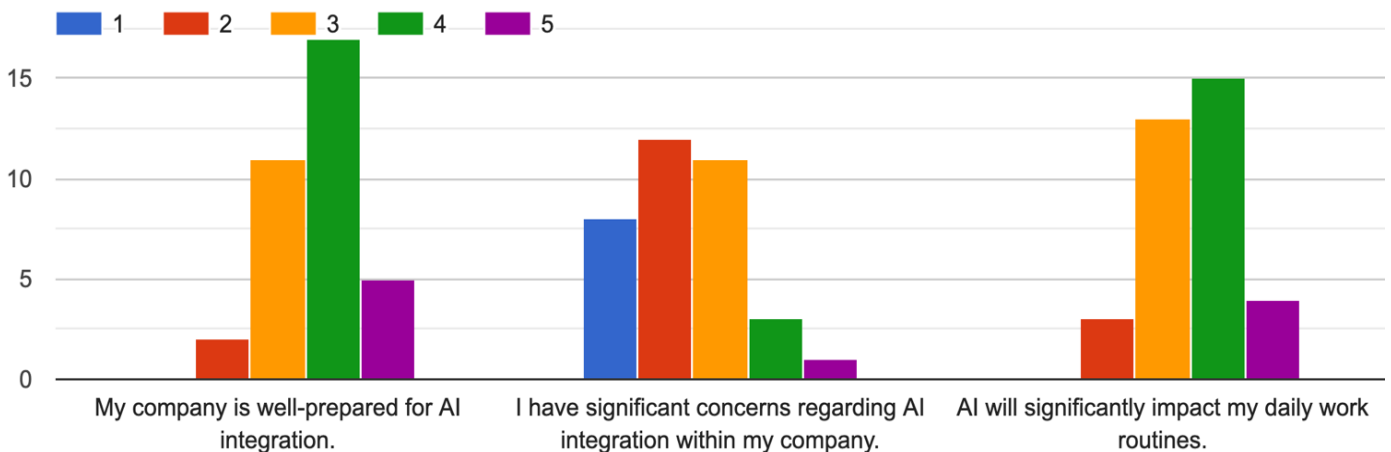

Figure 4. Survey Results for attitudes towards AI integration

My company is well-prepared for AI integration.

The survey results indicate that most respondents agree with their company's readiness for AI integration. Specifically, 17 out of 35 selected a 4, which is equivalent to answering 'agree,' and an additional 5 respondents chose a 5 for 'strongly agree.' A neutral position was held by 11 respondents, who selected a 3, and only 2 respondents picked a 2 or 'disagree,' showing skepticism.

I have significant concerns regarding AI integration within my company.

The results show that majority of respondents do not have concerns regarding AI integration into their company, with 12 respondents selecting a 2 for 'disagree' and 8 respondents selected a 1 for 'strongly disagree'. A notable number of 11 respondents picked a 3 for 'neutral'. Only 1 respondent selected a 5 for 'strongly agree', while three others selected a 4 for 'agree', indicating some concerns among respondents.

AI will significantly impact my daily work routines.

The survey shows that there is a clear lean towards agreement, with the 15 responses at scale 4, or 'agree' followed closely by 13 responses at scale 3, or 'neutral'. Four respondents chose 5 on the scale 'strongly agree', and only 3 selected a 1 on the scale 'strongly disagree'.

4.1.2   Irreplaceable human skills

Respondents rated three key statements in the survey section on irreplaceable human skills, and Figure 5 displays the results.
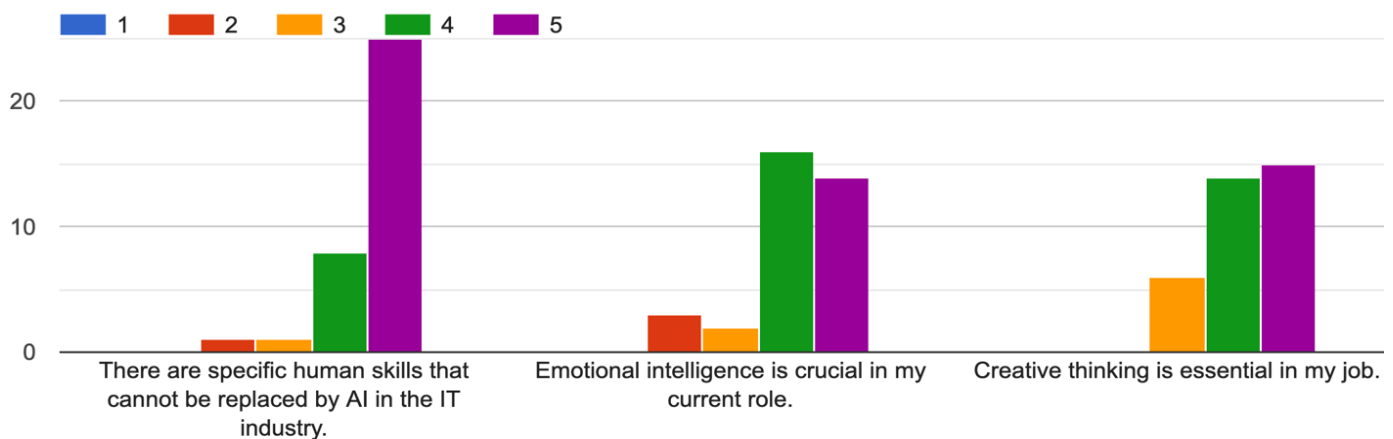

Figure 5. Survey results for irreplaceable human skills

There are specific human skills that cannot be replaced by AI in the IT industry.

In Figure 5, the responses show strong agreement, with 25 respondents choosing a 5 for 'strongly agree' and 8 respondents selecting a 4 for 'agree'. One respondent chose a 3 for 'neutral', and one selected a 2 for 'disagree'.

Emotional intelligence is crucial in my current role.

The majority of responses are in favor of agreement in Figure 5, with 16 respondents selecting a 4 for 'agree' and 14 responses for a 5 for 'strongly agree' on the scale. Three respondents selected a 2 for 'disagree,' while 2 respondents chose a 3 for a 'neutral' stance.

Creative thinking is essential in my job.

The responses in Figure 5 indicate agreement, with 15 selecting a 5 for 'strongly agree' and 14 selecting a 4 for 'agree' on the scale. A small number of 6 respondents preferred to choose a 3 for 'neutral'.

4.1.3 Environmental impact of AI

The section on the environmental impact of AI in the survey had three key statements that respondents rated, and the results are presented in Figure 6.
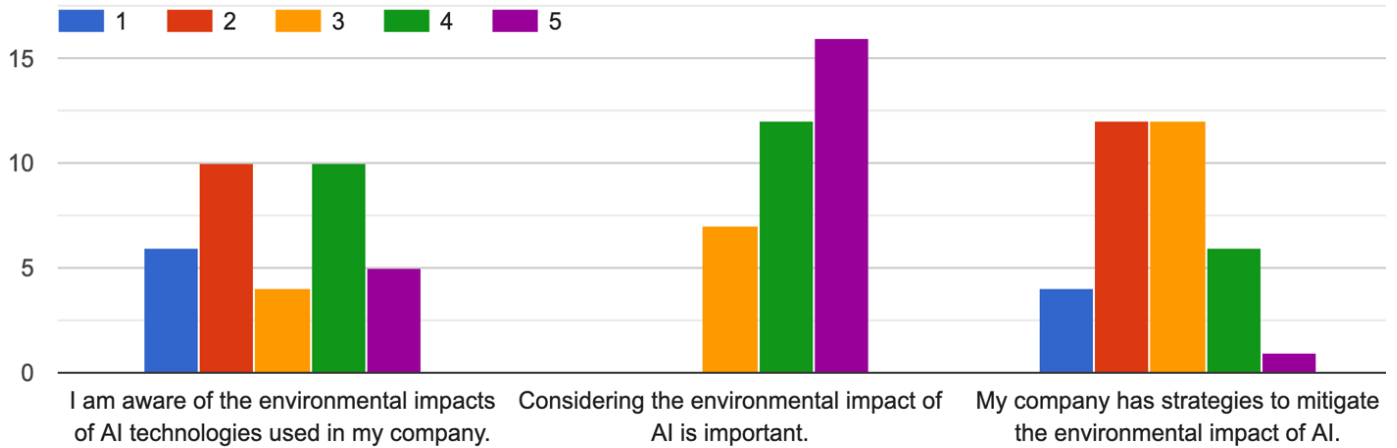

Figure 6. Survey results for environment impact of AI

I am aware of the environmental impacts of AI technologies used in my company.

The responses illustrated in Figure 6 show an equal number of 10 respondents selecting a 2 for 'disagree' and a 4 for 'agree', indicating no clear consensus among respondents on this statement. Interestingly, 6 respondents chose a 1 for 'strongly disagree', while 5 respondents selected a 5 for 'strongly agree', reflecting a slight lean toward disagreement. The remaining 3 respondents chose a 3 for 'neutral' on the scale.

Considering the environmental impact of AI is important.

The majority of respondents in Figure 6 agreed with the statement. Concretely, 28 out of 35 respondents expressed agreement, with 16 choosing 'strongly agree' and 12 selecting 'agree'. Seven respondents picked a 3, indicating a 'neutral' stance.

My company has strategies to mitigate the environmental impact of AI.

The responses are evenly split between 3 for 'neutral' and 2 for 'disagree', each receiving 12 responses. A number of 6 respondents chose a 4, showing they agree with the statement. On the other hand, 4 respondents selected a 1 for 'strongly disagree'. Only one person chose a 5, indicating they 'strongly agree' with the statement.

4.1.4 Workforce preparation for the AI era

The workforce preparation for the AI era section of the survey consisted of three statements to be graded by respondents, and the results are presented in Figure 7.
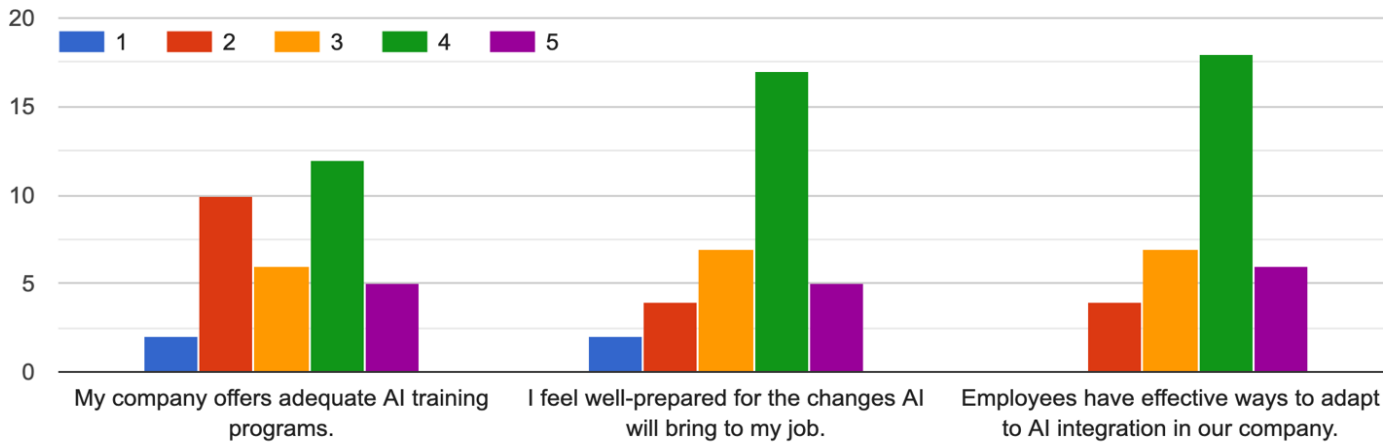

Figure 7. Survey results for workforce preparation for the AI era

My company offers adequate AI training programs.

According to Figure 7, the majority of respondents agree with the statement, as indicated by 12 responses for 4 'agree' and 5 responses for 5 'strongly agree'. However, 10 respondents chose 2 'disagree', and 6 respondents preferred a neutral position, choosing 3. Only 2 respondents marked the lowest rating of 1 'strongly disagree'.

I feel well-prepared for the changes AI will bring to my job.

The data in Figure 7 reveals that 17 responses is agreement, as evidenced by the selection of 4 on the scale, followed by 8 response of 3 for 'neutral'. A number of 5 respondents 5 express strong agreement with a rating of 5, and a number of 4 respondents went for 2, indicating disagreement. One response of 1, showing 'strongly disagree'.

Employees have effective ways to adapt to AI integration in our company.

The majority of respondents chose a 4, signifying agreement with the statement. A group of 7 respondents selected 3, indicating a 'neutral' viewpoint. A smaller contingent of respondents chose 5 to express their strong agreement. Only 4 respondents picked a 2, disagreeing with the statement.

4.1.5 AI Integration benefits and challenges

The section in the survey on the benefits and challenges of AI integration included five statements that were graded by respondents, and the results are displayed in Figure 8.
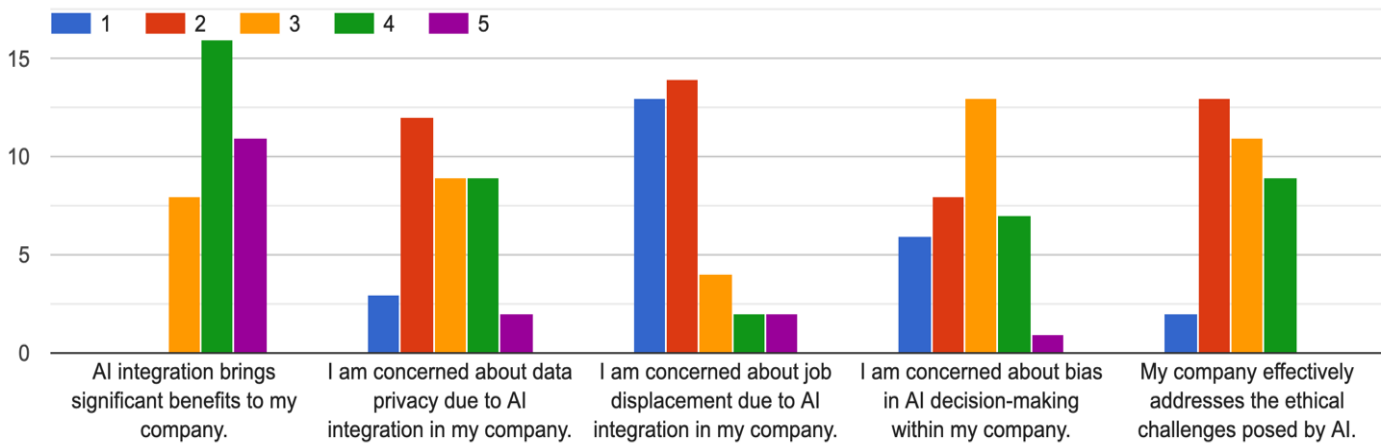
Figure 8. Survey results for benefits and challenges of AI integration

AI integration brings significant benefits to my company.

In Figure 8, most responses fall between 4 and 5, totaling 27, indicating that respondents generally agree with the statement. The remaining 8 responses are at 3, indicating a neutral position. The results indicate that all respondents see positive or neutral benefits from AI integration.

I am concerned about data privacy due to AI integration in my company.

Figure 8 shows that the majority of respondents are not concerned as 12 responses are at 2, indicating disagreement. There is an equal distribution of responses at 3 for 'neutral' and 4 for 'agree', with each having 9 responses. A group of 3 respondents selected a 1, signifying 'strongly disagree'. Only 2 respondents selected 5, showing they 'strongly agree' with the statement.

I am concerned about job displacement due to AI integration in my company.

In Figure 8, we observe that 14 responses are placed at 2, with a closely following number of 13 responses at 1, both indicating disagreement and strong disagreement, respectively, concerning job displacement due to AI. A smaller group of respondents are at 3 for 'neutral', with an equal number of responses, each having 2 at 4 for 'agree' and 5 for 'strongly agree'.

I am concerned about bias in AI decision-making within my company.

Figure 8 indicates that the majority of respondents, with 13 responses, are situated at 3, reflecting a 'neutral' stance. The second-highest number of 8 responses is placed at 2, indicating disagreement, and 6 at 1 for strong disagreement. This is followed by 7 responses at 4, agreeing, and one respondent at 5, signifying a 'strongly agree' position. The results show that respondents overall are not concerned or have a neutral position regarding AI affecting the decision-making process in their company.

My company effectively addresses the ethical challenges posed by AI.

Figure 8 shows a tendency toward disagreement, with the highest number of 13 responses at 2. This is closely followed by 11 responses at 3, indicating a 'neutral' position. A significant number of 9 respondents selected 4, demonstrating agreement with the statement. There were a few (2) responses at 1 for 'strongly disagree', and none of the respondents chose 5, which would indicate 'strongly agree.'

4.2 Interview findings

The qualitative research comprised five interviews with experts in the IT field, conducted to explain the results of a survey. The interviewees were selected either directly or with the assistance of a teacher, based on their knowledge and expertise in AI.

To ensure anonymity and prevent bias in the reader's perception, the interviewees are identified by numbers in Table 1. The table clearly presents their years of experience and areas of specialization. Additionally, it categorizes the size of their companies: small companies have under 100 employees, medium-sized companies range from 100 to 1500 employees, and large companies have more than 1500 employees.

Table 2. Interviewees' profiles

Interviewee number	Experience less or more than 5 years	Specializations	Company Size
Interviewee 1	less	Full stack development	Small
Interviewee 2	more	Program Architect	Large
Interviewee 3	more	Information Security	Large
Interviewee 4	less	Testing Engineer	Large
Interviewee 5	more	Software Development, ICT, ML, Program Architect	Medium

4.2.1   Attitudes towards AI integration

Interviewee 1 expressed an optimistic view regarding the integration of AI, stating, *"My company is actively integrating AI tools into our projects"*. This individual elaborated that the company is confident in using AI tools and has no concerns about AI integration. Regarding the impact on daily routines, Interviewee 1 mentioned, *"Currently, no. But as time goes on, like after a couple of weeks or months, it's definitely going to play a significant role"*, suggesting that the effects on daily routines will become more pronounced over time.

Interviewee 2 noted that AI is not a new concept for their company, which has been developing and investing in AI since 2013. This person mentioned, *"The generative AI was born already like 5 years ago, but it's been kept hidden in the lab"*, indicating that their company is a well-prepared early adopter of AI. With a deep understanding of AI and expertise in machine learning, Interviewee 2 is confident about the company's readiness for AI integration and viewing it positively.

Interviewee 3 discussed the phased integration of AI to ensure a smooth transition and effective adaptation, stating, *"We are progressively integrating AI in phases"*. They emphasized the importance of understanding AI's applications and its potential for adding value while also controlling risks. Interviewee 3 highlighted the balance between innovation and control: *"There's a bit of conflict between these aspects, but with robust policies, we can foster a culture of experimentation."* They believe that while AI will affect daily routines, the impact will not be significant.

Interviewee 4 revealed that their company has not yet integrated AI but is permitted to use AI tools freely. The interviewee holds a positive view on AI integration, expecting it to be gradual and responsible, and are confident that it will simplify work by replacing manual tasks in daily routines.

Interviewee 5 is positive about their company's readiness for AI integration but voiced concerns that *"rapid integration without structured planning may lead to significant disruption"*. They discussed AI's role in automating repetitive tasks, explaining that generative AI continues to automate tasks, thus allowing humans to focus more on creative and productive activities rather than repetitive ones. However, they noted that AI is still at the beginning of its journey to becoming more than just a productivity tool and has not yet significantly affected daily work routines.

4.2.2   Irreplaceable human skills

Interviewee 1 expressed their perspective on AI's impact on human skills: *"Many human skills will be replaced. I would estimate that around 50% of the skills will soon be substituted by AI"*.

However, Interviewee 1 also noted the enduring value of certain skills, particularly those involving client communication and those that require an emotional or problem-solving component: *"There are still some skills, especially like when communicating with the client or some things that just require somewhat of emotion or problem-solving"*

Interviewee 2 commented on the irreplaceable human skills in the context of AI: *"While machines can process data, they can't match the decision-making and interpersonal skills that humans possess"*. They remarked that the skills to communicate with peers are necessary and to make the right decisions. Interviewee 2 emphasized the importance emotional intelligence plays in customer interaction and teamwork: "*Emotional intelligence is crucial.*" Regarding the importance of creative thinking in the current job, the response was clear:

"*Creative thinking is essential as we explore the limits of what AI can do. It's more than just programming and analyzing data; it's about finding new ways to integrate AI into our daily tasks and creating innovative solutions that use AI to respond to new market needs"*.

Interviewee 2 is confident that creative thinking will help them integrate AI and is not a technical skill; it leads us to innovative solutions.

Interviewee 3 was asked which human skills will be valued by companies in the next three years, despite the advancements in AI: *"All those things that are not possible for any machine to do, for AI to do"*. Elaborating further, Interviewee 3, who has a background in IT, emphasized the enduring importance of human-centric skills:

"Having worked in IT, I've always leaned towards the human side - communication, influencing people, and the ability to convey messages with emotion are becoming increasingly important".

The discussion highlighted the significance of communication skills and those abilities that AI cannot replicate. Interviewee 3 believes that cognitive skills, particularly emotional intelligence and creative thinking, are crucial. Emotional intelligence is key in customer relations and communications, while creative thinking involves using the human brain to process information and devise optimal solutions.

Interviewee 4 has a definite stance on the human skills that AI cannot replace:

"*AI can provide data and predictions, but it cannot replicate the deep understanding of hardware and the ability to interact with complex electronic systems"*.

Interviewee 4 strongly believes that certain human skills, particularly in the field of electronics and testing, cannot be replaced by AI. They emphasize the necessity of deep understanding and

hands-on experience with complex systems, which AI cannot replicate. They highlighted the importance of emotional intelligence in their job:

"*It's implicit that emotional intelligence plays a role in managing workplace dynamics and communicating effectively with team members, especially when troubleshooting and coordinating under pressure.*"

They also suggest that emotional intelligence is crucial for managing team dynamics and effective communication. Additionally, Interviewee 4 highlights the importance of creative thinking, especially when unexpected technical issues arise, stating that AI often provides insufficient solutions, thus underscoring the need for human ingenuity and critical problem-solving skills.

Interviewee 5's opinion on human skills that will remain relevant despite the rise of AI is: *"Solid domain expertise remains critical in the AI era. As AI automates routine tasks, the value of deep domain knowledge increases"*. Interviewee 5 believes that humans need to deepen their knowledge to acquire new skills, which require the ability to work in collaboration with AI and to check AI's outputs. They discussed the importance of emotional intelligence in their current position and explained what emotional intelligence means to them:

"The ability to empathize, understand team needs, and communicate effectively are all skills that will continue to be highly valued and crucial in any AI-integrated workplace".

In response to a question about the importance of creative thinking at their job, Interviewee 5 stated that it is highly valued. They noted that AI now makes it possible to focus on creative thinking by taking over repetitive, simple tasks: *"AI pushes us toward more creative and productive tasks by taking over the repetitive ones"*.

4.2.3 Environmental impact of AI

Interviewee 1 admitted that he is not fully aware of the environmental impact of AI. Interviewee 1 remarked that a bit of assumption and surface knowledge about the environmental impact of AI is not enough to answer the question. However, Interviewee 1's opinion is that considering the environmental impact is important and expresses a need for companies to do their best to minimize the harmful effects of AI.

Interviewee 2 acknowledged their awareness of the environmental impact of AI during the discussion. They further elaborated that as part of their company, and proud to call themselves carbon zero, they are particularly attuned to these concerns. Interviewee 2 highlighted the significant energy consumption associated with AI technologies, especially drawing parallels with the energy-

intensive processes seen in cryptocurrency mining. Despite the potential for AI to enhance productivity and decision-making, Interviewee 2 stressed the importance of maintaining an environmental perspective, emphasizing that their company continually evaluates how the benefits of AI stack up against its environmental costs. They suggested that while AI technologies offer substantial advantages, the industry must engage in more sustainable practices and reduce energy consumption wherever possible

Interviewee 3 is aware of environmental impacts of AI and in the discussion when they were asked about their awareness, they responded, "*Yeah, I think that's the hard part. I feel really bad because of the knowledge on how much energy it takes just to do a couple of things with AI.*" This response illustrates a general awareness mixed with concern about the energy consumption involved in AI operations. Interviewee 3 also expressed concern about company's strategies about the future and current challenges, stating,

"I am confident that we will solve the harmful environmental impact. But what will happen before we have the solution? It is another thing. And that is the scary part".

This indicates their hope for improvement alongside a realistic understanding of the ongoing issues. On the potential competitive implications of AI's environmental impacts, Interviewee 3 speculated, "*That could be a competitive thing for companies to say we don't use AI because we know it's bad for nature*". This reveals an anticipation of how environmental considerations might become crucial factors in business strategy and competitive positioning in the future.

Interviewee 4 confirmed their awareness of the environmental impact of AI when asked, *"Are you aware of the environmental impact of AI?"* to which they responded, *"I heard about it"*. The follow-up question was, *"What's your take on it? Do you think AI will benefit the environment or be detrimental?"* Interviewee 4 replied:

"It's really hard to say; it's really ugly for that. But I think to gain something, you have to lose something. That's the bottom line, I guess. If you want something, then you really have to do something. Yeah. We need to understand that, but it's really early to say, I think this is like green energy coming into action".

Interviewee 4 acknowledges the significance of AI's environmental impact but suggests that it is a complex issue. They hint at a potential shift towards greener technology, although they also indicate that it's too early to make definitive statements. Regarding their company's perspective, Interviewee 4 noted that the company is aware of AI's environmental impact but has not discussed it in detail but will soon have an announcement about AI policy.

Interviewee 5 expressed awareness of the environmental impact of AI, particularly emphasizing the significant energy requirements for computational processes. They shared:

"The amount of compute is crazy that is required not only for compute, but if you touch it, like, I don't know, there might be less direct environmental impacts as well, but I think at least for some time now, there is just the resources, especially the computation needed for generative AI models, both the development and also for the actual use".

They highlighted the considerable energy consumed by generative AI and noted the potential benefits of reusing excess energy:

"Then unless that is handled somehow appropriately, like, for example, taking the excess heat and using that for, I don't know, heating something or generating something. Then it's a bit like cryptocurrency. It's a bit of a problematic, energetic consumption-wise".

Interviewee 5 also discussed the dual impact of AI on the environment and technology development:

"*The acceleration of development of AI and adoption of AI do have potential for disrupting scientific processes, development of new technologies for the benefit of the environment as well as perhaps operating some things more efficiently so that there would be less environmental impact.*"

They believe that AI development and adoption could lead to more efficient and less harmful environmental effects. Furthermore, Interviewee 5 commented on the role of large tech companies in ecological AI development:

"*With the generative AI so far, the possibilities to operate big models, machine learning models that are under the hood, it's largely in the hands of big tech companies and some other big organizations that have the resources. If there is no influencing possibility for the organizations that are going to use generative AI in terms of choosing more ecological options.*"

They explained that big tech companies have the resources and opportunities to develop more ecological AI options and offer these choices to other businesses.

4.2.4   Workforce preparation for the AI era

Interviewee 1 admits to feeling unprepared for the impending AI changes at their workplace. They express a clear need for additional knowledge and training to effectively enhance AI models, revealing a current gap in their understanding and ability. While there is no specific AI training program at their company, they do participate in regular discussions focused on how AI can be

leveraged for business growth. Furthermore, Interviewee 1 sees a significant need among employees for acquiring new skills, especially in understanding and developing AI technologies like language models and Python programming.

Interviewee 2 comments on the uneven readiness for AI integration among various companies, noting that a significant portion, like their own, are facing substantial challenges primarily due to disorganized or inaccessible data. They credit their company for providing substantial learning resources through a "trailhead environment," which offers extensive training and certification in AI. This, they argue, is critical as effective AI integration is heavily dependent on both sophisticated data management and comprehensive employee training.

Interviewee 3 discusses the strategic responsibilities companies have in effectively utilizing AI while also mitigating potential risks. They emphasize the necessity of a balanced approach that includes both a rigorous control framework and a company culture that encourages experimentation with AI. Interviewee 3 argues for an environment that allows employees to engage with AI technologies, not just for work-related tasks but to broadly understand its capabilities and limitations. Additionally, they stress the growing importance of human skills, advocating for training programs that enhance these alongside technical AI abilities.

Interviewee 4, working as a testing engineer, views AI as a supportive tool that could simplify daily tasks without eliminating human roles. He notes that his company encourages the use of AI tools as needed, though a comprehensive integration has not yet occurred. Instead, there is support for employees to independently pursue learning through financial aid for courses, allowing them flexibility in their professional development.

Interviewee 5 believes that AI primarily functions to automate routine tasks, thereby enabling humans to focus on more creative and productive endeavors. They stress the importance of domain knowledge and ICT skills in ensuring that AI systems are reliable and their outputs useful. With AI becoming increasingly standard in the ICT sector, Interviewee 5 highlights the critical need for ongoing education and training. They advocate for organizational support in providing learning opportunities, underscoring the necessity for technical personnel to understand and adapt to AI advancements effectively.

4.2.5 Benefits and challenges of AI integration

Interviewee 1 is optimistic about the benefits of AI, suggesting it could greatly ease user life and enhance efficiency, potentially multiplying productivity by two to three times or more. However, they express significant concerns about data privacy, cautioning against providing personal information to AI systems and advocating for the use of dummy data to safeguard against potential

data breaches. Furthermore, Interviewee 1 acknowledges that AI might replace up to 50% of entry-level jobs, as AI capabilities now match those of entry-level developers, designers, and photographers. They also address the issue of bias in AI, emphasizing the importance of the quality and alignment of training data to minimize biases in AI outputs. While they do not detail specific company actions regarding these ethical challenges, their concerns highlight critical ethical implications of AI integration.

Interviewee 2 praises AI's predictive capabilities, which have enhanced their company's strategic and creative tasks since implementing machine learning for sales forecasts in 2013. Although not explicitly discussing data privacy, they underscore the need for robust data governance to prevent privacy breaches. Job displacement is not directly mentioned, but the replacement of certain human capabilities by AI is acknowledged. They highlight company's efforts to counteract bias with tools like the "Einstein trust layer," which integrates data masking and bias detection, and emphasize the importance of understanding ethical considerations, particularly in finance and regulatory compliance.

Interviewee 3 describes generative AI as a transformative technology in their daily work, making AI more comprehensible and utilitarian. They don't specifically mention data privacy but discuss the necessity of maintaining control and clear policies to manage AI-related risks. Job displacement concerns are indirectly addressed, with AI seen as taking over monotonous tasks, thus altering rather than replacing jobs. They stress the importance of diligent training and continuous verification of AI to prevent biases and call for ethical AI practices that reflect company values and culture.

Interviewee 4 views AI as a beneficial tool, akin to how calculators aid in mathematical tasks, expected to simplify job tasks especially in monitoring and predicting maintenance needs. While not directly discussing data privacy, they note the use of a tailored version of ChatGPT that allows for controlled data usage, indicating an approach to managing privacy concerns. They believe AI will necessitate basic IT skills for all in the future, acknowledging inherent biases in AI and the importance of framing questions carefully to mitigate such biases. They also contemplate the environmental impact of AI, hoping for greener AI technologies.

Interviewee 5 sees AI as an automation tool that enhances consistency and quality in repetitive tasks, allowing humans to focus on more creative and quality-critical roles. They highlight the critical role of data selection in AI training to prevent biases and the need for in-house expertise to ensure AI outputs are reasonable and unbiased. They also discuss the environmental impact of AI, comparing its energy consumption to that of cryptocurrencies, and urge big tech companies to offer more sustainable AI.

5   Discussion and Conclusion

5.1   Discussion

In this chapter, findings will be discussed regarding each research question, ethical concerns, limitations, and validity of the research.

5.1.1   RQ1 Attitudes towards AI integration

The literature review in chapter 2.2 has provided insights from employees around the world, showing that they are generally optimistic about integrating generative AI. The employees believe that AI integration would be beneficial overall. The remarkable point is in chapter 2.2 the top managers from Finnish companies have higher level of skepticism towards generative AI and are cautious but globally companies have better attitude towards AI integration.

Survey results shows chapter 4.1 that majority of respondents feel well prepared for AI integration and do not have significant concerns regarding AI integration. However, the respondents by majority expressed their opinion that integration of AI will significantly impact their workday routine.

The interview insights complemented the survey findings, showing that most interviewees were optimistic about AI integration. The concerns expressed by the interviewees varied due to their different backgrounds and expertise in the IT field. Those with over 10 years of experience and higher positions were confident that AI would not significantly affect their routines but would instead allow them to focus on more important tasks, viewing AI as a time-saving tool. In contrast, those with less than five years of experience had either neutral stances or disagreed that their company was prepared, and they anticipated drastic changes in their routines due to AI integration. The positions held by the interviewees, such as project lead, ICT specialist, senior developer, AI specialist, and junior developer, revealed that junior developers were more concerned about AI integration than others. The interviewees noted that they are not yet early adopters of AI and preferred to share only their current thoughts instead of making assumptions.

Overall, the interview insights resonated with the survey results but also highlighted that survey respondents might be at different positions and possess varying levels of expertise related to AI or AI integration. This reveals a flaw in the survey, as there was no question related to the position and expertise of respondents, which could have explained why the answers varied. It is noteworthy that the topic of the study is currently trending, and companies are cautious about disclosing their internal plans regarding AI integration, which may also explain why interviewees were not fully forthcoming about their companies' internal procedures.

5.1.2   RQ2 Irreplaceable human skills

In Chapter 2.3, the literature review revealed that the capabilities of AI allow it to assist professionals effectively. For example, GitHub Copilot helped 88 % of developers increase their productivity. Additionally, Chapter 2.3 discusses the growing need for human skills, particularly cognitive skills such as creative and analytical thinking, which businesses anticipate will become increasingly important.

Businesses recognize the benefits of adopting AI, such as process automation, and are investing in reskilling and training their employees. This demonstrates that businesses understand AI cannot replicate cognitive human skills, highlighting the need for skills like analytical and critical thinking. Consequently, businesses are focusing on automating processes and preparing their workforce by investing in training to help employees acquire these essential skills.

Survey results in Subchapter 4.1.2 show that the majority of respondents believe there are specific skills in the IT field that cannot be replaced by AI. An equal number of respondents recognize the importance of emotional intelligence at work. Additionally, almost all respondents acknowledge that creative thinking is essential in their jobs. These survey results confirm that respondents believe certain skills cannot be replicated by AI and remain highly important in their current roles.

The survey included emotional intelligence and creative thinking as part of cognitive skills, aligning with the literature review's indication of the growing need for cognitive skills in businesses. The survey results demonstrate that employees in IT companies resonate with businesses' forecasts about the increasing need for cognitive skills and the recognition that certain skills cannot be replicated by AI.

The interview findings in Subchapter 4.2.2 reveal that experts agree on the significance of creative thinking and emotional intelligence, which are deemed irreplaceable due to the necessity for customer and peer interaction. Furthermore, experts mentioned that combining technical expertise with human intelligence and creativity drives innovation and distinguishes humans from AI.

Both the survey and interviews emphasize the critical role of cognitive skills, consistent with the literature. Experts highlighted that AI serves as a tool to aid in focusing on problem-solving and decision-making rather than on repetitive tasks that AI can handle, providing a practical perspective on the integration of AI. Professionals in the IT field and students can focus on gaining and improving their cognitive skills, which cannot be replaced by AI. Highlighting these skills in job applications can help them remain relevant in the labor market.

5.1.3 RQ3 Environmental impact of AI

The theoretical framework in Chapter 2.4 highlights growing concerns about the environmental impact of AI technologies, particularly large language models like GPT-3. These models require vast amounts of computational power, leading to significant carbon emissions. While this is a downside of generative AI, Chapter 2.4 also discusses how Google data centers have managed to use AI capabilities to reduce energy consumption and improve cooling system efficiency. Studies show that although the harmful effect of AI is undeniably significant, its potential to help the environment might be greater as it is only the beginning of AI exploration. It is crucial for businesses and their employees to understand AI's detrimental effects and use its capabilities mindfully.

Reflecting on the survey data in Subchapter 4.1.3, there appears to be a lack of consensus among IT professionals about the extent of AI's environmental impact. Figure 6 illustrates a mixed view, with nearly equal numbers of respondents disagreeing and agreeing about their awareness of AI's environmental impacts. However, a significant majority acknowledge the importance of considering these impacts. The survey also revealed a critical gap in knowledge about specific strategies companies are employing to mitigate these effects, as evidenced by mixed responses regarding their company's mitigation strategies.

Interview findings in Subchapter 4.2.3 further underscore the survey findings. Some interviewees expressed a deep understanding of the environmental costs associated with AI, comparing the energy demands of AI systems to those of cryptocurrency mining, which is known for its high energy consumption. Additionally, some interviewees voiced a hopeful outlook that technological advancements could lead to more energy-efficient AI solutions. Some noted their company's proactive stance as a carbon-neutral entity, emphasizing ongoing efforts to align AI deployment with environmental sustainability goals. They highlighted that major IT companies have the resources to make significant changes and offer more sustainable AI. However, some interviewees could not explicitly state what their companies are doing to raise awareness about the environmental impact of AI or how they are mitigating these effects.

Based on these findings, it is recommended that IT companies not only enhance transparency about their AI systems' environmental impacts but also invest in developing and adopting more energy-efficient technologies. Providing a sustainable version of AI to smaller companies, even if it is less powerful, can help them contribute to environmental conservation. This approach could also serve as a marketing tool for companies to attract more customers by demonstrating their commitment to sustainability. Slowing down the evolution of AI until technologies are able to reduce its detrimental environmental impact would also benefit the environment. Additionally, future research should explore the effectiveness of various mitigation strategies employed across the industry,

potentially leading to best practices that harmonize AI advancements with environmental sustaina-
bility.

5.1.4 RQ4 Workforce preparation for the AI era

In Chapter 2.3 is concluded that a majority of businesses will prioritize investing in on-the-job learn-
ing and training while accelerating process automation, as shown in Figure 2. This demonstrates
that most businesses recognize the benefits of training and reskilling their personnel. By enhancing
their employees' skills, companies can turn them into valuable assets, particularly since the labor
market may not have enough professionals with the necessary skill sets. Instead of competing for
skilled professionals, businesses can reskill and train their employees with proven track records
and technical skills.

Survey results in Subchapter 4.1.4, illustrated in Figure 7, indicate that almost half of the respond-
ents agree that their company offers AI training. However, a notable number of respondents disa-
gree. Overall, respondents feel prepared for AI integration, with most feeling they can easily adapt
to AI integration. The survey results show that not all companies offer training programs related to
AI, but the survey question does not reflect whether their companies provide training on other as-
pects of improving cognitive skills.

Interview data in Subchapter 4.2.3 provided a more comprehensive overview of individual and or-
ganizational preparedness for AI. Some respondents expressed optimism about integrating AI
tools to enhance work efficiency and open new avenues for innovation. One interviewee mentioned
that their company has its own platform for learning AI-related skills or other useful professional
skills. Most interviewees pointed out that they receive credits for using other platforms to enhance
their knowledge or acquire new skills. However, others highlighted challenges related to rapid AI
adoption, such as the need for structured planning and the potential for significant job role transfor-
mations, emphasizing the importance of strategic readiness and adaptive capacity.

The combination of literature review and interview findings shows that there is no clear stance from
companies regarding the AI revolution or a strategy for preparing their workforce for it. While com-
panies acknowledge the importance of providing opportunities for employee growth and continuous
learning, they do not make clear statements about which skills will be valued for their employees.
Self-assessment and self-improvement are essential for professionals in the IT field, but not all em-
ployees can grasp what they are expected to learn or do. Additionally, employees often have sub-
stantial workloads and may not be able to follow global trends or enhance their knowledge about
AI. This lack of a clear strategy could lead to the loss of valuable employees, requiring the human

resources department to recruit new employees with the necessary skills if market changes demand it.

The IT market in Finland might be slower, as shown in Chapter 2.2, where top companies in Finland are less enthusiastic about generative AI adoption compared to the global trend. Businesses should forecast and create plans for the near future, even if global adoption is not yet universal. Statistics indicate that generative AI is triggering global adoption and changes in the labor market, underscoring the need for proactive business planning.

5.1.5 RQ5 Benefits and challenges of AI integration

The topic of benefits and challenges is broad and still not fully explored, with different perspectives available. However, in Chapter 2.5, the literature review provided insights that generative AI has the potential to bring significant benefits, as emphasized by companies like Microsoft and Google. AI can automate and transform processes, leading to substantial advantages for businesses. However, it also presents challenges, such as biased data output, the risk of misuse, and the potential for sensitive data to be accessed by criminals. Additionally, governments are developing new laws and policies regarding AI, creating a significant legal risk due to potential new requirements or restrictions.

Survey results depicted in Figure 8 in Subchapter 4.1.5 show that almost all respondents are positive that AI will benefit their company. The majority of respondents are not concerned that AI will displace them or affect the company's decision-making process. However, some respondents are concerned about data privacy due to AI integration, but they believe that their company will address ethical issues effectively. The survey results indicate that employees are optimistic about the benefits of AI, as these are easier to see from their perspective, while challenges are more visible to employers. The respondents' confidence that their company will address all ethical challenges posed by AI is a good indication of trust from the employees.

Interviewees in Subchapter 4.2.5 share a consensus that AI will benefit their company and themselves by automating repetitive manual tasks, allowing them to focus on more important activities. The majority of interviewees believe that sensitive data should not be entrusted to AI, even if it is the internal AI of their company. All interviewees strongly believe that AI contains biases due to being trained on biased data, and these biases should be mitigated before deployment.

The combination of the literature review, survey results, and interview findings highlights the benefits of integrating AI into companies, but also indicates a high risk of sensitive data leakage. The survey and interview questions were somewhat premature, as many companies have not fully adopted AI, and consideration of these aspects primarily falls on upper management. Not all

interviewees had comprehensive knowledge about all ethical challenges, and survey respondents may not have thoroughly studied these challenges either.

Overall, the findings suggest that it is recommended to provide AI with "dummy" data and have a mitigation plan to minimize biases. However, it is still too early to speculate that AI will significantly affect the decision-making process of companies. The benefits of AI to business are likely greater than the challenges, but companies should proceed with caution and not rush AI integration.

5.2 Evaluation of the research

The research phase was productive but biased AI sources made finding factual data difficult. Survey and interview questions often reflected these biases. Efforts were made to minimize researcher bias and let respondents express their own views. Survey questions were designed as statements to ensure responses were not company specific. Interviewees were concerned about confidentiality. Readers can accept the conclusions or form their own opinions.

The research focused on Finnish companies, with limited local reports available. The global context might differ. Limited reports on AI's environmental impact and benefits may quickly become outdated. More expert interviews could provide broader insights and better generalize the IT field's situation. Quantitative research lacked details on respondents' job positions and expertise. Time constraints pressured interview analysis.

Strengths include a mixed-method approach, minimizing bias and providing a comprehensive overview. Reliable sources were used for the literature review. The topic is current and relevant, offering a foundation for further studies. The findings are useful for IT businesses and professionals. Objectives were to examine AI integration in IT companies, attitudes towards AI, irreplaceable human skills, AI's environmental impact, and workforce preparation for the AI era. These were achieved through a literature review, surveys, and interviews with IT professionals.

The main results of the research are summarized as follows:
- Attitudes Towards AI Integration: The survey and interview findings indicate a generally positive attitude towards AI integration among IT professionals. Most believe AI will significantly impact their daily work routines, enhancing productivity and efficiency.
- Irreplaceable Human Skills: Cognitive skills, particularly creative thinking and emotional intelligence, were identified as irreplaceable by AI. Both survey respondents and interviewees emphasized the importance of these skills in the IT industry.
- Environmental Impact of AI: There is a significant awareness of AI's environmental impact, particularly its high energy consumption. However, there is also optimism about AI's

potential to contribute positively to environmental sustainability through enhanced efficiency and resource optimization.

- Workforce Preparation for the AI Era: Companies are investing in training and reskilling programs to prepare their workforce for AI integration. However, there is a noted gap in structured AI training across different companies.
- Benefits and Challenges of AI Integration: While the benefits of AI, such as increased productivity and innovation, are widely recognized, challenges like data privacy, bias, and ethical considerations are also significant concerns.

The results of this research can be applied in several ways:

- Companies should invest in comprehensive AI training programs that focus on enhancing cognitive skills, such as creative thinking and emotional intelligence.
- IT companies should adopt sustainable practices to mitigate the environmental impact of AI, including developing energy-efficient AI technologies and promoting eco-friendly AI operations.
- Companies need to develop robust policies and frameworks to address ethical issues related to AI, such as data privacy and bias.

5.3   Lessons learned and improvements

Throughout of this research, I have gained numerous insights and identified several areas for enhancement. Exploring AI integration within the IT industry has provided me with a deep understanding of the multifaceted challenges and opportunities presented by this evolving technology. During the research process, several valuable lessons were learned:

- The research highlighted the critical importance of cognitive skills, such as creative thinking and emotional intelligence, in the AI era.
- The significant environmental impact of AI underscored the need for sustainable practices and innovations in AI development.
- The ethical challenges posed by AI integration, including data privacy and bias, were emphasized as crucial areas for ongoing research and policy development.
- The need for continuous learning and adaptation among IT professionals to stay relevant in an AI-driven corporate landscape was reinforced.

While the study provided significant insights, certain limitations were identified that could be addressed in future research. In my opinion, there are several aspects that could have been improved in the research:

- Increasing the sample size for both surveys and interviews would provide a more representative overview of the IT sector.

- A more detailed analysis of AI integration in specific IT subfields could provide more tailored insights.
- Conducting a longitudinal study to track changes over time would offer deeper insights into the evolving landscape of AI integration.

5.4 Suggestion for future research

The research results can serve as the foundation for future research, and here are some ideas for future research:

- By investigating specific IT subfields, researchers can tailor AI strategies to meet the distinct needs of each sector, highlighting differences and developing more effective AI applications.
- Exploring how AI can enhance human emotional intelligence in the workplace, particularly in customer service, team management, and leadership. This research could improve workplace dynamics and employee interactions.
- The study briefly touched on AI's environmental impact, but sustainability in AI needs more research. Detailed studies on AI's environmental impact and sustainable practices are essential. Future research could focus on innovations that reduce AI's carbon footprint, promoting eco-friendly operations.
- The ethical use and regulation of AI present another important research avenue. As AI's influence grows, comprehensive studies on its ethical implications are needed. Research could focus on creating guidelines and regulations for AI use, especially concerning privacy, bias, and data security.
- Researching optimal models for human-AI collaboration can provide valuable insights. Studies could focus on maximizing productivity while ensuring job satisfaction among employees, involving case studies of successful implementations and best practices for human-AI collaboration.

5.5 Conclusion

This research highlights the transformative potential of AI integration in the IT sector while underscoring the need for a balanced approach to mitigate associated challenges. The findings indicate that AI can significantly enhance productivity and efficiency by automating routine tasks, allowing employees to focus on more creative and complex problem-solving activities. However, the irreplaceable nature of cognitive skills, such as creative thinking and emotional intelligence, emphasizes the importance of human-AI collaboration. To fully harness AI's potential, companies must invest in comprehensive training programs that enhance these cognitive skills and prepare their workforce for the evolving AI landscape. Additionally, the environmental impact of AI, particularly

its high energy consumption, requires urgent attention. Companies should adopt sustainable practices and develop energy-efficient AI technologies to minimize their ecological footprint.

Moreover, the research underscores the importance of addressing ethical concerns, such as data privacy and bias, which accompany AI integration. Establishing robust policies and frameworks to manage these issues is crucial for ensuring responsible and ethical AI use. While the benefits of AI, such as increased innovation and improved decision-making, are widely recognized, the challenges it poses necessitate a strategic and thoughtful approach. Future research should continue exploring the evolving dynamics of AI integration, focusing on sustainable practices, ethical considerations, and the development of models that optimize human-AI collaboration. By doing so, the IT sector can leverage AI's transformative power while mitigating its risks, ultimately leading to a more efficient, innovative, and sustainable industry.

The results of this research can benefit a diverse range of stakeholders within the IT sector and beyond. IT companies, particularly those in the early stages of AI integration, can gain valuable insights into the benefits and challenges of adopting AI, enabling them to develop more informed strategies. HR professionals and corporate trainers can utilize the findings to design and implement targeted training programs that focus on enhancing irreplaceable human skills, such as creative thinking and emotional intelligence. Policymakers and industry regulators can also benefit by understanding the ethical and environmental considerations associated with AI, helping them to craft guidelines and regulations that promote responsible AI use. Additionally, academics and researchers can build upon this study to further explore the nuanced impacts of AI on various subfields within the IT industry. Finally, IT professionals and students can use the research to identify critical skills that will remain relevant in an AI-driven job market, thereby enhancing their career resilience and adaptability.

References

Alekseeva, L., Azar, J., Giné, M., Samila, S., Taska, B. 2021. The Demand for AI Skills in the La-bor Market. Labour Economics, forthcoming. DOI: 10.2139/ssrn.3470610. URL: https://pa-pers.ssrn.com/sol3/papers.cfm?abstract_id=3470610. Accessed: 26 January 2024.

Bailin, S. 1987. Critical and Creative Thinking. Informal Logic, Vol. IX.1, Winter, pp. 23-30.

Ball, H.L. 2019. Conducting online surveys. Journal of human lactation, 35(3), pp. 413-417.

Benbya, H., Davenport, T.H, Pachidi, S. 2020. Artificial intelligence in organizations: Current state and future opportunities. MIS Quarterly Executive, 19(4).

Brown, S. 2021. Machine learning, explained. MIT Sloan. URL: https://mitsloan.mit.edu/ideas-made-to-matter/machine-learning-explained Accessed: 16 May 2024

Brinkmann, S. 2014. Interview techniques in critical psychology. In: Encyclopedia of Critical Psy-chology, pp. 1008-1010.

Chui, M., Hall, B., Mayhew, H., Singla, A., & Sukharevsky, A. 2022. The state of AI in 2022—and a half decade in review. McKinsey & Company. URL: https://www.mckinsey.com/capabilities/quan-tumblack/our-insights/the-state-of-ai-in-2022-and-a-half-decade-in-review. Accessed: 26 February 2024.

Chui, M., Yee, L., Hall, B., Singla, A. & Sukharevsky, A. 2023. The state of AI in 2023: Generative AI's breakout year. McKinsey & Company. URL: https://www.mckinsey.com/capabilities/quan-tumblack/our-insights/the-state-of-ai-in-2023-generative-ais-breakout-year#/. Accessed: 26 Janu-ary 2024.

Climate Neutral Group s.a. What exactly is 1 ton of CO2? We make it tangible. URL: https://www.climateneutralgroup.com/en/news/what-exactly-is-1-tonne-of-co2-v2/ Accessed: 1 Mach 2024.

Creswell, J.W. 2021. A concise introduction to mixed methods research. SAGE publications. New York.

Creswell, J.W. 2003. Qualitative, quantitative, and mixed methods approach. SAGE publications. New York.

DiCicco-Bloom, B. & Crabtree, B.F. 2006. The qualitative research interview. Medical education, 40(4), pp. 314-321.

Dixon, B. 2024. What are AI Ethics? Definition and Recommendations for AI in the Workplace. AI Business. URL: https://aibusiness.com/responsible-ai/what-are-ai-ethics-definition-and-recommendations-for-ai-in-the-workplace. Accessed: 19 May 2024.

Eloundou, T., Manning, S., Mishkin, P., Rock, D. 2023. Gpts are gpts: An early look at the labor market impact potential of large language models. arXiv. DOI: https://doi.org/10.48550/arXiv.2303.10130. Accessed: 17 May 2024.

European Commission s.a. Consequences of climate change. European Commission. URL: https://climate.ec.europa.eu/climate-change/consequences-climate-change_en. Accessed: 19 May 2024.

Fink, A. 2003. The survey handbook. SAGE publications. New York.

Galaz, V., Centeno, M.A., Callahan, P.W., Causevic, A., Patterson, T., Brass, I., Baum, S., Farber, D., Fischer, J., Garcia, D., McPhearson, T. 2021. Artificial intelligence, systemic risks, and sustainability. Technology in Society, 67, p.101741. DOI: https://doi.org/10.1016/j.techsoc.2021.101741. URL: https://www.sciencedirect.com/science/article/pii/S0740624X22001101. Accessed: 26 February 2024.

Galletta, A. 2013. Mastering the Semi-Structured Interview and Beyond: From Research Design to Analysis and Publication. NYU Press. New York.

Goddard, M. 2017. The EU General Data Protection Regulation (GDPR): European regulation that has a global impact. International Journal of Market Research, 59(6), pp. 703-705.

Goodfellow, I., Pouget-Abadie, J., Mirza, M., Xu, B., Warde-Farley, D., Ozair, S., Courville, A. & Bengio, Y. 2014. Generative adversarial nets. Advances in neural information processing systems, 27. URL: https://arxiv.org/abs/1406.2661. Accessed: 26 February 2024.

IBM s.a. What is Artificial Intelligence? URL: https://www.ibm.com/topics/artificial-intelligence. Accessed: 26 February 2024.

Insight Enterprises. 2024, Insight Survey: Quantifying Employee Attitudes Toward AI-Powered Devices. URL: https://www.insight.com/en_US/content-and-resources/2024/insight-survey-quantifying-employee-attitudes-toward-ai-powered-devices.html. Accessed: 13 May 2024.

Jarrahi, M.H. 2018. Artificial intelligence and the future of work: Human-AI symbiosis in organizational decision making. Business horizons, 61(4), pp.577-586. URL: https://www.sciencedirect.com/science/article/abs/pii/S0007681318300387. Accessed: 26 February 2024.

Kalliamvakou, E. 7 September 2022. Research: Quantifying GitHub Copilot's Impact on Developer Productivity and Happiness. The GitHub Blog. URL: https://github.blog/2022-09-07-research-quantifying-github-copilots-impact-on-developer-productivity-and-happiness/. Accessed: 26 February 2024.

Madan, R. & Ashok, M. 2023. AI adoption and diffusion in public administration: A systematic literature review and future research agenda. Government Information Quarterly, 40(1), p.101774. DOI: https://doi.org/10.1016/j.giq.2022.101774. URL: https://www.sciencedirect.com/science/article/pii/S0740624X22001101. Accessed: 14 February 2024.

Manyika, J., Chui, M., Brown, B., Bughin, J., Dobbs, R., Roxburgh, C., & Byers, A. H. 2011. Big data: The next frontier for innovation, competition, and productivity. McKinsay & Company. URL: https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/big-data-the-next-frontier-for-innovation. Accessed: 14 February 2024.

McCarthy, J., Minsky, M.L., Rochester, N. & Shannon, C.E. 2006. A proposal for the dartmouth summer research project on artificial intelligence, august 31, 1955. AI magazine, 27(4), pp. 12-14.

McKinsey & Company. 2024. What is generative AI. URL: https://www.mckinsey.com/featured-insights/mckinsey-explainers/what-is-generative-ai. Accessed: 29 April 2024.

Microsoft 365 Team. 2023. Work Smarter, Not Harder: 10 Benefits of AI in Your Workplace. URL: https://www.microsoft.com/en-us/microsoft-365/business-insights-ideas/resources/benefits-of-ai-in-your-workplace. Accessed: 16 May 2024.

Microsoft s.a. What is Artificial Intelligence? URL: https://azure.microsoft.com/en-us/resources/cloud-computing-dictionary/what-is-artificial-intelligence#self-driving-cars. Accessed: 26 February 2024.

Microsoft. 2023. Work Trend Index Annual Report, Will AI Fix Work? URL: https://www.microsoft.com/en-us/worklab/work-trend-index/will-ai-fix-work. Accessed: 26 February 2024.

Moon, M.D. 2019. Triangulation: A method to increase validity, reliability, and legitimation in clinical research. Journal of emergency nursing, 45(1), pp. 103-105.

Nadkarni, P.M., Ohno-Machado, L. & Chapman, W.W. 2011. Natural language processing: an introduction. Journal of the American Medical Informatics Association, 18(5), pp. 544-551.

Newton, D.P. 2010. Quality and peer review of research: an adjudicating role for editors. Accountability in research, 17(3), pp. 130-145.

Nvidia s.a. What is Generative AI? URL: https://www.nvidia.com/en-us/glossary/generative-ai/. Accessed: 26 February 2024.

OpenAI. 2024. Creating video from text. URL: https://openai.com/sora. Accessed: 26 February 2024.

Pan, M.L. 2017. Preparing literature reviews: Qualitative and quantitative approaches. 5th edition Routledge. New York.

Rouhianen, L. 2020. Artificial Intelligence: 101 things you must know today about our future. Updated Edition for Post-Covid 19 World. Kindle Direct Publishing. Seattle.

Salovey, P. & Mayer, J.D. 1990. Emotional intelligence. Imagination, cognition and personality, 9(3), pp. 185-211.

Shulze, J. 2024. What is Information Technology? 2024 Guide. Coursera. URL: https://www.coursera.org/articles/what-is-information-technology. Accessed 16 May 2024.

Solita, 2023, TOP500 companies and Generative AI, URL: https://www.solita.fi/guides/top-500-companies-and-generative-ai-in-finland/. Accessed 14 May 2024.

Smith, B. & Nakagawa, M. 2023. Accelerating Sustainability with AI: A Playbook. Microsoft On the Issues Blog. URL: https://blogs.microsoft.com/on-the-issues/2023/11/16/accelerating-sustainability-ai-playbook/. Accessed 6 March 2024.

Staley, D. J. 2000. Digital Historiography: Kasparov Vs. Deep Blue. Ann Arbor, MI: MPublishing, University of Michigan Library. URL: https://quod.lib.umich.edu/cgi/t/text/text-idx?c=jahc;view=text;rgn=main;idno=3310410.0003.220. Accessed: 20 January 2024.

Stanford University. 2023. AI Index Report 2023. URL: https://aiindex.stanford.edu/report/. Accessed: 20 January 2024.

Turing, A.M. 2009. Computing Machinery and Intelligence. In: Epstein, R., Roberts, G., Beber, G. (eds) Parsing the Turing Test, pp. 23-65. Springer. Dordrecht.

Walker, K. 14 November 2023. An opportunity agenda for AI. The Google blog. URL: https://blog.google/outreach-initiatives/public-policy/google-ai-opportunity-agenda/. Accessed 6 March 2024.

World Economic Forum, 2023. The Future of Jobs Report 2023. URL: https://www.weforum.org/publications/the-future-of-jobs-report-2023/. Accessed 6 March 2024.

Yoro, K.O. & Daramola, M.O. 2020. CO2 emission sources, greenhouse gases, and the global warming effect. In Advances in carbon capture. Woodhead Publishing, pp. 3-28.

Appendices

Appendix 1. Survey Questions

AI Revolution in IT: Exploring How Companies Embrace Change and Transform the Industry

Dear respondents,

Thank you for taking part in this survey, which is entirely anonymous and contributes to a student's thesis project at Haaga-Helia University. The questionnaire will require about 10 minutes to complete and consists of multiple-choice questions, rated on a scale from 1 to 5 (where 1 is 'Strongly Disagree' and 5 is 'Strongly Agree'). Your participation is greatly appreciated!

* Pakollinen kysymys

Section on Attitudes towards AI Integration *
Please rate on a scale 1-5 (1: Strongly disagree; 3: Neutral; 5:Strongly Agree)

	1	2	3	4	5
My company is well-prepared for AI integration.	○	○	○	○	○
I have significant concerns regarding AI integration within my company.	○	○	○	○	○
AI will significantly impact my daily work routines.	○	○	○	○	○

Section on Irreplaceable Human Skills *
Please rate on a scale 1-5 (1: Strongly disagree; 3: Neutral; 5:Strongly Agree)

	1	2	3	4	5
There are specific human skills that cannot be replaced by AI in the IT industry.	○	○	○	○	○
Emotional intelligence is crucial in my current role.	○	○	○	○	○
Creative thinking is essential in my job.	○	○	○	○	○

Section on Environmental Impact of AI *
Please rate on a scale 1-5 (1: Strongly disagree; 3: Neutral; 5:Strongly Agree)

	1	2	3	4	5
I am aware of the environmental impacts of AI technologies used in my company.	○	○	○	○	○
Considering the environmental impact of AI is important.	○	○	○	○	○
My company has strategies to mitigate the environmental impact of AI.	○	○	○	○	○

Section on Workforce Preparation for the AI Era *
Please rate on a scale 1-5 (1: Strongly disagree; 3: Neutral; 5:Strongly Agree)

	1	2	3	4	5
My company offers adequate AI training programs.	○	○	○	○	○
I feel well-prepared for the changes AI will bring to my job.	○	○	○	○	○
Employees have effective ways to adapt to AI integration in our company.	○	○	○	○	○

Section on Attitudes towards AI Integration *
Please rate on a scale 1-5 (1: Strongly disagree; 3: Neutral; 5:Strongly Agree)

	1	2	3	4	5
AI integration brings significant benefits to my company.	○	○	○	○	○
I am concerned about data privacy due to AI integration in my company.	○	○	○	○	○
I am concerned about job displacement due to AI integration in my company.	○	○	○	○	○

I am concerned about bias in AI decision-making within my company.	○	○	○	○	○
My company effectively addresses the ethical challenges posed by AI.	○	○	○	○	○

Lähetä   Tyhjennä lomake

Appendix 2. Consent Form

I hereby give my consent to participate in the research interview according to the research announcement provided as an attachment.

The content of the aforementioned research announcement has been explained to me, and I understand the nature of the study, what participation entails for me, how the data I provide will be used, and how it will be stored. I have had the opportunity to ask questions and have received satisfactory answers to all my inquiries.

I understand that participation in the research is voluntary. I am aware that I can withdraw this consent at any time without giving a reason, and for instance, I can discontinue the interview if I so desire.

Consent can be withdrawn by getting in touch with the thesis author, Sakhi Hashmat Khalil, or by advising teacher Kasper Valtakari. Please note that once the research results have been analyzed, the contribution of a single participant cannot be retrospectively removed.

For additional information about the research, the thesis author can be contacted.

I have reviewed the research announcement and the content of the consent form, and I give my consent to participate in the research.

With my signature, I confirm that I give my consent to participate in the research.

Name of the Consent Giver:

Date   Signature

Appendix 3. Interview Questions

- How prepared is your company for integrating AI? Are there any concerns surrounding this integration?
- Does AI play a significant role in your daily routines? Have you noticed any changes in your routine due to AI? Will AI impact your daily routine if it is integrated?
- Which human skills do you believe will remain relevant despite the evolution of AI?
- Is emotional intelligence crucial for your current role? What about creative thinking?
- What are your thoughts on the environmental impact of AI?
- Is considering the environmental impact of AI important for a company?
- Does your company have a strategy to mitigate the environmental impact of AI?
- Do you feel prepared for the changes that AI will bring to your job?
- Do you believe that your colleagues are prepared for the changes that AI will bring?
- Does your company provide training for employees to help them adapt to the AI era?
- Will AI bring benefits to your company? Do you have any concerns about data privacy due to integrating AI into your company? Do you have concerns about AI bias? About job displacement?
- Do you think your company will be able to address the ethical challenges posed by AI?