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Transformative or Disruptive?
Exploring the Impact of Generative AI on Leadership

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Abstract

The Evolution, Not Revolution, of Leadership supported by Generative AI

Modern businesses currently witness a dramatic boost in Artificial Intelligence (AI) technologies. Specifically, AI's generative capabilities are gaining more and more momentum. This technological advancement not only promises to be an addition to the arsenal of modern business tools, but also to impact the way today's leaders perform their day-to-day tasks. This might confront leaders with challenges for their style of leading yet not fully understood. While leadership dynamics have traditionally been rooted in human experience, intuition, and analytical judgement, they now face new, uncertain influences.

This study seeks to explore the ways in which GenAI might challenge well established traditional leadership styles within corporate environments, by studying literature and interviewing a variety of professionals. These professionals range from C-level Managers at both start-ups and established, multinational corporations to experts in leadership training and innovative technologies. During those interviews we discussed the maturity of GenAI implementation, heard stories of their journeys, and discovered what those professionals are thinking about the why, when, and how GenAI will impact leadership.

The primary goal of this research is not only to explore possible changes but to contribute to a deeper understanding and preparedness for the evolution, not revolution, of leadership in the context of GenAI. It offers a critical exploration into how this emerging technology might reshape leadership, providing a thoughtful and strategic approach towards embracing the new challenges and opportunities it presents.

Acknowledgements

I am incredibly grateful to many of the people whose contributions have been priceless while exploring the complex, yet fascinating, relationship between leadership and generative AI.

Above all, I would want to express my sincere gratitude to the interviewees for voluntarily lending their time, insights, and experiences. The foundation of this research has been your perspectives, which have added depth and discernment that have greatly enhanced this study. To everyone who challenged and broadened my thinking by acting as sounding boards and thought provokers: your feedback has been crucial in enhancing the breadth and depth of my work as well.

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Contents

1 Introduction

1.1 Purpose

While digital transformation traditionally focuses on tools and technology, this study roots from an interest in the human factors of this technological evolution.

The thesis aims to analyse the influence of Generative AI (GenAI) on leadership within companies and organizations. Whilst more and more businesses start integrating GenAI use cases, a pressing question emerges: How are human leadership styles evolving in response? With a specific lens on technology-driven companies and organizations, the author seeks to provide valuable insights into the human challenges and opportunities encouraged by GenAI in professional environments.

1.2 Significance / Problem

GenAI emerges as a potential game-changer for various business operations in today's fast-paced technological world. While AI's broader footprint in corporations has been in automating tasks to enhance efficiency, such as data analysis, infrastructure planning, and supply chain optimization (Criddle, 2023), GenAI, with its capability to produce high-quality content from visual arts to music, video and literature, offers a different, more expansive range of opportunities. In the business context, „AI enables the decision-making process, whether of a computer program or an organization, to anticipate a future state" based on patterns and probabilities derived from vast amounts of data. "and it understands the implications of a course of action leading to that future state." not through human-like comprehension, but by calculating the most likely outcomes (Sinha & Al Huraimel, 2020, S.246). But, unlike traditional AI, GenAI not only has the capabilities to anticipate but actively create and generate content that can shape and might even transform decision-making processes within organizations. Recognising patterns and 'understanding' them, learn and improve its own performance, and standardizing managerial tasks are just a few additional capabilities of generative technologies (Quaquebeke & Gerpott, 2023).

Yet, the broad opinion around scholars and leadership experts seems to be that real leadership is irreplaceable and will not be impacted by GenAI (Quaquebeke & Gerpott, 2023). It is the perspective of the author that, what has long been celebrated as a managerial "sixth sense" - a unique ability for data analysis and interpretation fuelled by gut feeling - becomes democratized through GenAI. This technology not only systematizes these advanced reasoning skills but also makes them accessible to a wider audience. With the implementation of AI Agents, everyone will be Manager in the future. Companies, together with their people, must confront and adapt to the altered circumstances in order to be prepared for or already undergoing the necessary transformation (Creusen et al., 2017). This shift necessitates that organizations cultivate new leadership skills while also phasing out certain traditional competencies that may no longer be as relevant. The influence on leadership is awaiting in-depth exploration. The traditional landscape of leadership, which has been based on experience, intuition, and human judgment, is currently being reshaped (Canals & Heukamp, 2020). Algorithms not only execute tasks more efficiently but also contribute to proposing and supporting new strategies, business models, and directions. Decision-making processes leaned heavily on the collective knowledge and understanding of groups or individuals, while it is now enhanced with new perspectives that were not immediately apparent or even possible through human analysis alone (Sinha & Al Huraimel, 2020).

Business executives will continue to engage in the process of digital transformation within their organisations over the entirety of their professional lives (Lamarre et al., 2023). Over the last decade, digital has infiltrated practically every area of our life, thanks to the emerge of new technologies (e.g., Metaverse, Cloud, AI), increased hardware, and software development methodologies (e.g., agile, lean , scrum) inherited from the tech industry (Lamarre et al., 2023).

It is possible that business leaders do not have difficulty implementing use cases based on GenAI; nevertheless, they do have difficulty comprehending and managing the impact that it has on human characteristics. There has been a significant rise in the amount of artificial intelligence research conducted across the board, with the exception of the domain of leadership and organisational management (Quaquebeke & Gerpott, 2023). This leads to the assumption that understanding GenAI's potential influence on leadership is

not only of academic interest but is also of significance for all companies navigating digital transformation - regardless of size, industry, or business model.

1.3 Goal and Output / Solution for the Problem

The primary goal of this research is to analyse leadership and decision-making in the context of GenAI.

The specific objectives of this study are:

- Contextual Understanding: The study will begin with a foundational exploration of Generative AI, detailing its capabilities and functionalities. It will also give a brief overview of current leadership styles. This sets the stage for comprehending the subsequent potential changes in leadership dynamics.
- Impact on Leadership: Based on this, the study will examine how leaders in various sectors perceive the role of GenAI in their function. Understand if, and how, their leadership strategies have adapted or might adapt in response to GenAI's capabilities.
- Practical Insights and consequences: Through interviews with leaders across various sectors, gather practical insights into the current and anticipated challenges and opportunities presented by GenAI. This will aid in capturing a real-world snapshot of leadership in the GenAI era.

The research seeks to offer both a theoretical framework and actionable insights, aiming to benefit academic scholars, corporate leaders, and businesses navigating their journey through the rapidly evolving digital landscape.

1.4 Appreciation of the problem

The potential impact of GenAI on leadership is not trivial due to the complexity of human dynamics. It is important to understand the technological aspects of GenAI, as well as the nuances of human behaviour, particularly in professional environments.

Leadership itself embodies a mosaic of human attributes: from intuition and emotion to experiential learning and moral judgment. It also encompasses a wide variety of styles ranging from autocratic to transactional to holistic and servant. Each of these styles might

react differently to the integration of GenAI. Some might find harmony and enhancement, while others may face challenges or even conflicts. Evaluating how GenAI might complement or even challenge these aspects forms the essence of this study.

Decisions often strike a balance between cold, hard facts and data, and the warmer touch of human factors like intuition, ethics, and empathy (Farrell, 2023). It is a very complex process, based on intuitive, naturalistic, and analytical reasoning (Bedford et al., 2022). While GenAI boasts unparalleled capabilities in generating data-driven insights, the real conundrum lies in how leaders will compare these insights against traditional decision-making elements and implement them in their daily tasks.

Furthermore, the rise of such powerful AI-driven tools might have the potential to redefine hierarchies within organizations. This prompts questions about how the role of leadership might be reimagined, and who will hold the reins in this brave new world.

As "guardians of the culture" (Kucera, 2018), leaders bear the responsibility to cultivate an environment where GenAI is not just used but is truly accepted, understood, and appreciated. So, it's equally important to consider the culture within the organization. Prioritising the optimisation of internal processes and structures is essential in order to resolve internal conflicts and transform the organisational culture (Creusen et al., 2017).

Lastly, the novelty of GenAI underscores a pronounced gap in our comprehensive understanding of its effects on leadership. Literature reviews in relevant databases such as Google Scholar, and the ZHAW University Library, as well as exploring reputable sources like the Harvard Business Review, Mercer, and McKinsey have revealed that, even though the general research in the field of AI is increasing by the minute. The research in the field of leadership is still in its infancy. Hypothetical, the impact of GenAI on leadership plays an important role in the successful implementation of this technology within organizations.

1.5 Research Design

This research is driven by the literature research on GenAI's current and potential influence on leadership paradigms within modern businesses. To explore its potential impact in depths, the study is structured around the research questions described in 3.1. These

questions are carefully designed to unravel the multifaceted impact of GenAI, ranging from its role in protentional reshaping organizational structures and leadership styles. The methodology to investigate these questions follows a four-step process: Literature research, qualitative research, analysis, and conclusion.

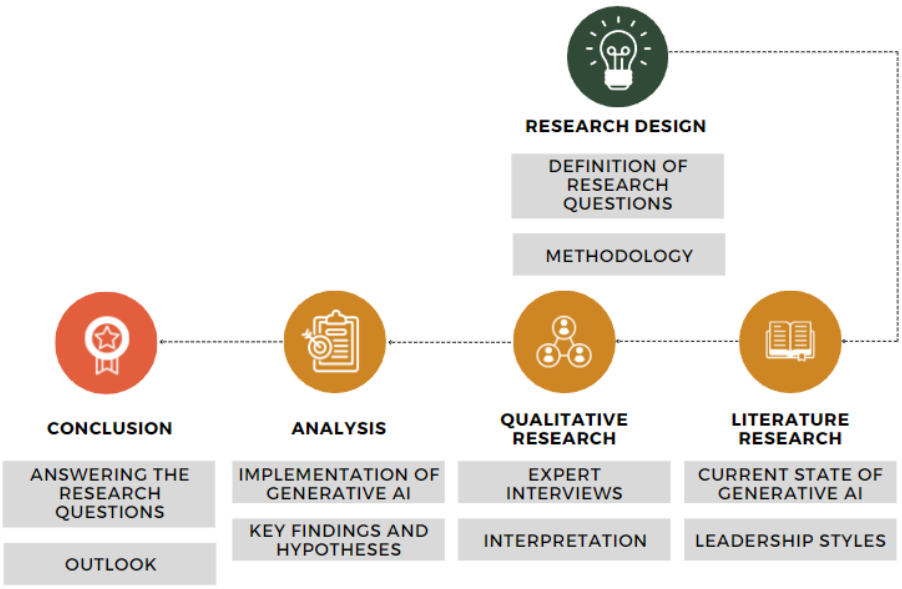

Figure 1: Research design (own representation)

The preliminary literature research involves a review of current academic literature, industry reports, and case studies related to GenAI. The objective is to establish a strong theoretical basis and acquire valuable knowledge about the present applications and trends in GenAI inside modern organisations. This level is crucial for identifying gaps in the existing knowledge base and comprehending the development of GenAI technologies and their practical uses in business. After completing an in-depth review of the existing literature, the study proceeds to use qualitative research methods, namely by collecting data through interviews. The qualitative method facilitates a more profound investigation of subjective experiences, opinions, and forecasts concerning the future of GenAI in leadership. In the analysis phase, the data acquired from both the literature research and the qualitative research are carefully analysed. This involves the process of detecting and analysing recurring patterns, themes, and connections that arise from the data. The analysis seeks to address the research questions by combining theoretical ideas with practical experiences and expert perspectives. The last phase of the study is

expressing the outcomes obtained from the analysis. This section will present an overview of the results, emphasising the anticipated impact of GenAI on leadership within organisations. Additionally, it seeks to provide business leaders with recommendations on efficiently using GenAI in their role.

2 Literature Research

The literature research performed for this study indicates that both domains, Generative Artificial Intelligence and Leadership, have been significantly researched. Nevertheless, it is notable that these topics have not been commonly explored in combination with one another. The shortage of focus on the concept of AI in Leadership is concerning, particularly given the significant implications AI holds for the future of work. According to Canals and Heukamp (Canals & Heukamp, 2020), AI is not only expected to disrupt traditional job profiles of white-collar workers but also take over a substantial amount of managerial tasks (Chui, Hazan, et al., 2023). A study recently published by McKinsey in July 2023 acknowledges this statement, showing that nearly 25% of managerial hours, 30% of the hours spend by business professionals, and 50% in total hours can theoretically be automated by GenAI by 2030 (McKinsey, 2023a). With the rapid advances of GenAI we have seen in 2023, they even corrected those estimates to 60-70 percent (Chui, Hazan, et al., 2023). The lack of research and awareness in this field could be attributed to the relative recent emergence of the subject. It is possible that the full extent of AI's impact on leadership and management practices is yet to be fully recognized by both corporate leaders and academic researchers.

The literature research was separated into two specific areas. The initial phase of the literature study circled around investigating the origins and analysing the present developments in GenAI. This required an in-depth study of its development, technological progress, and present-day use-cases. The second part of the study focused on conducting an in-depth study of both conventional and contemporary leadership styles. This part aimed to provide a contextual analysis of different leadership methods in relation to GenAI, exploring their intersections, and potential influence of this emerging technology.

2.1 Data Collection Process: Literature Research

In order to build a comprehensive understanding of the intersection between GenAI and Leadership, an extensive literature research process was followed.

2.1.1 Definition of search strings

The literature research was guided by carefully constructed search strings, designed to capture a wide array of relevant results. All kinds of contributions have been considered (scholarly articles, books, book chapters, papers, etc.). The search strings were developed to align with the key themes of the thesis, ensuring that the literature collected was both relevant and comprehensive. The following search strings were utilized:

- **Generative AI AND Leadership**: This string aimed to find literature that specifically discusses the role of GenAI in leadership contexts.
- **Generative AI AND Leadership Styles**: Focused on identifying sources that explore how GenAI influences or interacts with different leadership styles.
- **Generative AI AND Impact on Leadership**: Aimed at gathering literature that examines the broader implications of GenAI on leadership as a practice and concept.
- **Artificial Intelligence AND Human-Centric Leadership**: Sought literature that bridges AI with human-centric approaches to leadership, an area of growing importance in the AI era.

2.1.2 Databases and search platforms

The literature search was conducted across several academic databases and platforms to ensure a diverse and extensive collection of sources:

Table 1: Research Databases

DATABASES	PURPOSE	RESOURCES
ZHAW Swisscovery https://zhaw.swisscovery.slsp.ch/	SPECIALIZED RESOURCES AND PUBLICATIONS IN THE FIELD OF LEADERSHIP AND TECHNOLOGY	BOOKS, ARTICLES
Google Scholar https://scholar.google.com/	BROAD RANGE OF ACADEMIC ARTICLES AND PAPERS ACROSS VARIOUS DISCIPLINES.	SCHOLARLY ARTICLES, PAPERS, ...
Researchgate https://www.researchgate.net/	CUTTING-EDGE RESEARCH AND ACCESS TO PUBLICATIONS DIRECTLY FROM RESEARCHERS IN THE FIELD.	SCHOLARLY ARTICLES, PAPERS, ...
Statista https://www.statista.com/	INTEGRATION OF EMPIRICAL DATA INTO THE RESEARCH	STATISTICS

In addition to these academic databases, the research also includes reports and papers from renowned research organizations known for their influential work in business and technology. This inclusion was crucial for gaining a practical and industry-focused perspective on the subject matter.

The following additional sources were included:

Table 2: Additional Research Sources

OTHERS	PURPOSE	RESOURCES
KPMG https://zhaw.swisscovery.slsp.ch/	PROVIDED ACCESS TO INDUSTRY REPORTS AND WHITEPAPERS OFFERING INSIGHTS INTO THE BUSINESS IMPLICATIONS OF EMERGING TECHNOLOGIES LIKE GENERATIVE AI.	REPORTS, ARTICLES
McKinsey & Company https://scholar.google.com/	OFFERED A WEALTH OF RESEARCH ARTICLES AND STUDIES FOCUSING ON THE INTERSECTION OF TECHNOLOGY, LEADERSHIP, AND ORGANIZATIONAL TRANSFORMATION.	REPORTS, ARTICLES
Harvard Business Review https://www.researchgate.net/	A KEY SOURCE FOR THOUGHT LEADERSHIP ARTICLES AND CASE STUDIES ON MANAGEMENT PRACTICES, INCLUDING THE IMPACTS OF AI ON LEADERSHIP.	ARTICLES, PODCASTS

Only openly accessible articles were taken into account as sources. Data of commercial nature that were not accessible via a student or university account in these databases were excluded.

2.1.3 Search results and considered literature

In order to determine the relevance, the abstract of each item was carefully reviewed. If any uncertainty occurred, the content was analysed for the specified search criteria and keywords, and the files was thereafter either rejected or used.

The search generated a combined total of 80 data sets of which 35 have been considered either directly or partially relevant. Through collaboration with interview partners, and external sources (Community Exchange, LinkedIn, …), more findings were incorporated, resulting in a total of 37 documents being considered.

2.2 Time Travel - The (not so) sudden rise of GenAI

For the purpose of understanding the connection between generative AI and leadership, it is important to first delve into the history of artificial intelligence. With OpenAI making its application ChatGPT available to the general public on November 30, 2022[1] , it seems that self-aware machines, we all know from science fiction blockbusters, are finally becoming a reality for the general public and thus for employees all across the organization. Looking back over the past year, the role of AI in our daily lives has quietly but significantly deepened. It is not just an abstract concept anymore as we see it in virtual assistants in our applications, literally almost all tech powering our smartphones and even in drones and self-driving cars (Musleh Al-Sartawi et al., 2021). However, let us pause momentarily and see how exactly we arrived at this point.

Rise of computing and internet and the early days of artificial intelligence

The idea of artificial intelligence is far from being new. In the 1830s Lady Lovelace described what is widely known as the first computer program in her infamous 'Note G' (O'Regan, 2013). She argued that the 'Analytical Engine' "[…] weaves algebraical patterns just as the Jacquard loom weaves flowers and leaves" and that humanity at some point in time also "[…] might even invent laws for series or formulæ in an arbitrary manner, and set the engine to work upon them, and thus deduce numerical results which we might not otherwise have thought of obtaining." (Hollings et al., 2018).

Lady Lovelace even went a step further and wrote about what we nowadays call AI: "The Analytical Engine has no pretensions whatever to originate anything. It can do whatever we know how to order it to perform.". And even though, A.M. Turing challenged this statement in his paper "Computing Machinery and Intelligence" from 1950, in which he presented a set of criteria for evaluating the intelligence of a machine (Hollings et al., 2018), it can be seen as the beginning of thinking about an artificial intelligence.

John McCarthy initiated a working group on intelligent machines at the Dartmouth College in 1955 and introduced the term "artificial intelligence". This marked the emergence

[1] Open AI (2022), Introducing ChatGPT, https://openai.com/blog/chatgpt, accessed 03.12.2023

of AI as an academic field. In 1959, IBM scientist Arthur Samuel introduced the phrase "machine learning" to describe computer algorithms that acquire knowledge and make predictions based on data by constructing a model from sample inputs (Canals & Heukamp, 2020).

The three levels of artificial intelligence

In his 1980 book "Minds, brains, and programmes," John R. Searle argues that there are two kinds of artificial intelligence to be distinguished: weak and strong AI. "The principal value of the computer in the study of the mind is that it gives us a very powerful tool." is how Searle characterises weak AI and is basically what Lady Lovelace predicted 150 years before. For instance, it helps us to develop and test hypotheses with more rigour and accuracy, and is primarily designed to identify and match patterns, typically with specific focus on particular tasks. To quote Lady Lovelace once again: "It can do whatever we know how to order it to perform.". Today, the computer science community calls this type of AI Artificial Narrow Intelligence (ANI), and it marks the first level of AI (Strelkova & Pasichnyk, 2017).

Strong artificial intelligence, on the other hand, is defined as follows: "The computer is not merely a tool in the study of the mind; rather, the appropriately programmed computer really is a mind, in the sense that computers (...) can be literally said to understand and have other cognitive states.". Searle refers to the capability of a machine to possess a genuine understanding of its surroundings. It has the ability to cultivate emotions and creativity. It can reason, plan, solve problems, think abstractly, comprehend complex ideas, and learn quickly from experience. According to Strelkova and Pasichnyk, a common term for the second stage is Artificial General Intelligence (AGI) which describes strong AI, and the point of singularity at the same time (Strelkova & Pasichnyk, 2017).

The third level of AI is commonly referred to as Artificial Super Intelligence (ASI) and outperforms the human brain in every aspect and field, including scientific creativity, general wisdom, and social skills (Strelkova & Pasichnyk, 2017).

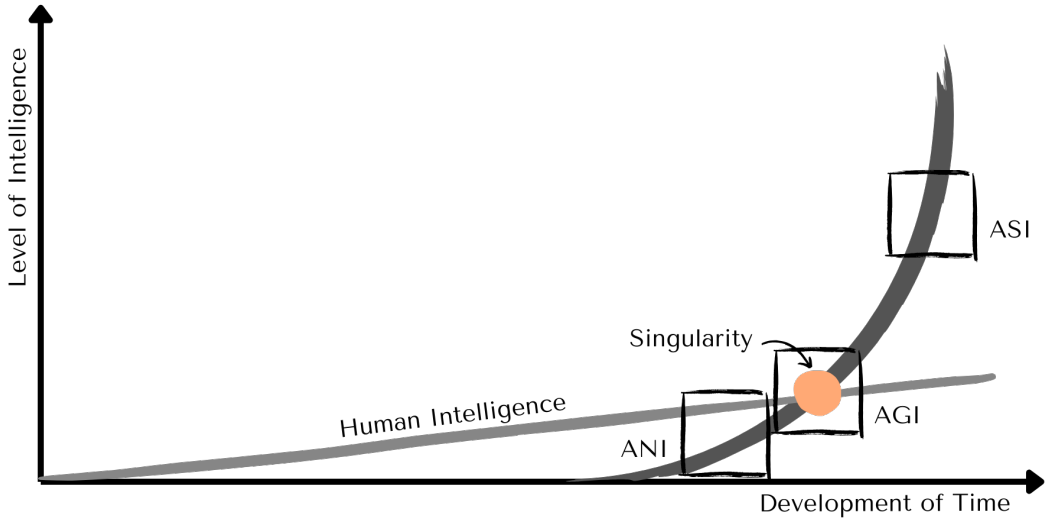

Figure 2: Development of AI as described by Peifer et al., 2022 (own representation)

Apart from ANI, AGI and ASI, the field of AI is also classified into symbolic and sub-symbolic AI, as these represent fundamental approaches. Symbolic AI, often referred to as traditional AI, is grounded in high-level, human-readable symbols and explicit rules for problem-solving and reasoning. It's characterized by logical, rule-based systems seen in Expert Systems and is known for its interpretability and traceability (Dennis, 2020). However, Symbolic AI struggles with processing ambiguous and noisy data, or learning from raw data (Goertzel, 2012). Sub-symbolic AI, in contrast, includes methods like Artificial Neural Networks (ANNs) and Machine Learning. It does not use explicit symbols or rules but learns decision-making from large datasets, often mimicking biological brain processes. Sub-symbolic AI, especially Machine Learning, excels in identifying patterns from complex, unstructured data, but it lacks the explicit reasoning and interpretability of Symbolic AI (Miikkulainen, 1994). While Symbolic AI offers clarity and rule-based reasoning, Sub-symbolic AI offers adaptability and proficiency in handling large-scale, complex data. But the more proficient Sub-symbolic AIs become, the less we can understand them. For this reason, the development of integrated Explainable Artificial Intelligence (XAI) systems is currently a key focus in AI research, seeking to harness the strengths of both approaches for more robust and understandable AI systems (Calegari et al., 2020).

Machine Learning splits into Supervised, Unsupervised, Reinforcement, and Deep Learning (DL). Deep Learning facilitates the analysis of vast quantities of data to identify

correlations and patterns that are often unnoticeable to humans. This is a key factor contributing to the significant advancement of AI (Taulli, 2022). Deep Learning is based on the theory of Artificial Neural Networks (ANNs) and tries to imitate the human brain functionalities. The most common ANNs are the Recurrent Neural Networks (RNNs), the Convolutional Neural Networks (CNNs) and the Generative Adversarial Networks. (GANs) However, it is important to acknowledge that deep learning is still in its early stages of development and commercialization. Google for example began implementing this technology for its search engine in 2015 and was also the spearhead that introduced the model of the Transformer, which enabled GANs to compute inputs in parallel and drastically accelerated DL efficiency (Taulli, 2022).

Transformers were the breakthrough to sub-symbolic AI and the GenAI technologies we now know. They enable the creation of digital content, such as images, music, and text, leveraging advancements in deep learning efficiency and parallel processing (Cao et al., 2023).

Figure 3 only visualizes the sub-symbolic path leading from broader AI technologies to Large Language Models (LLMs). Other AI technologies and methodologies, particularly those falling under the symbolic AI spectrum, are not represented in this figure. This definition is intentional, as the study primarily addresses aspects of AI that are most relevant to the evolution and functionality of GenAI, without delving into the broader array of AI technologies that exist outside this specific trajectory.

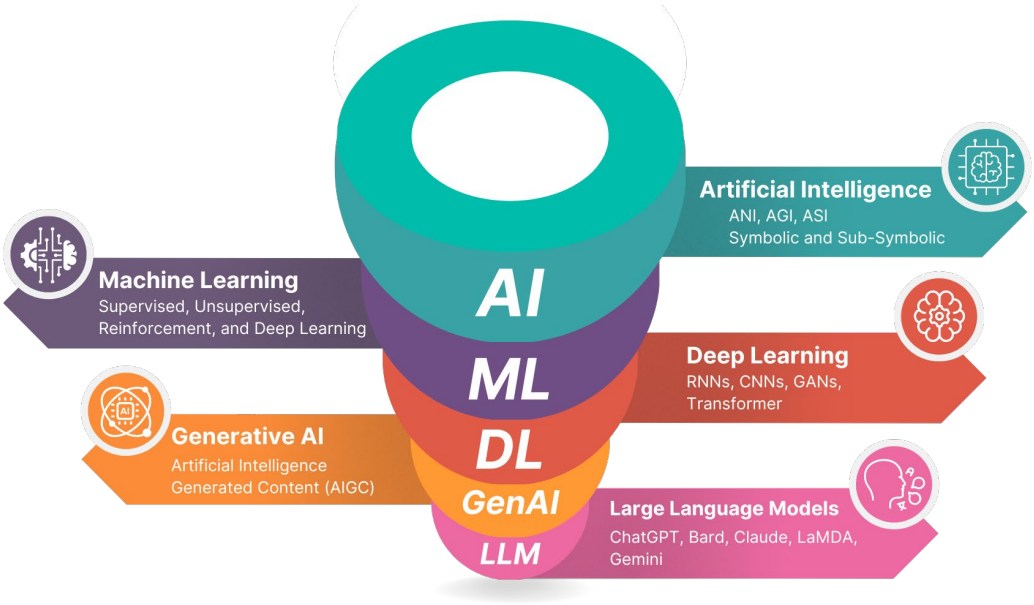

Figure 3: AI Structure simplified (own representation)

The advent of artificial intelligence generated content

Ever since, AI has been constantly growing, and first developments of generative models date back to the 1950s (Cao et al., 2023) and we experience ANI in many aspects of our modern lives, such as Cars, search engines, and now in GenAI applications such as ChatGPT, DallE, or Bing. However, the latest advances in Deep Learning (DL), Large Language Models (LLMs) and Large Multimodal Models (LMMs) have created a hype, never seen before (Citi, 2023). The rapid growth of generative AI in recent years can be attributed to two main driving factors. The primary reason is the augmentation in data and processing power (Valls & Gibert, 2022) at our disposal. While training a model could take several weeks in the past, the rapid progress in computing power has made it possible to now train models significantly faster (Cao et al., 2023). However, the current level of excitement is a result of enterprises leveraging the scalability of cloud technology, which has allowed them to enhance the value of their technology without a substantial increase in cost (Taulli, 2022), making it accessible for a wide range of users outside the computer science community. OpenAI, an AI research company founded in December 2015 by Sam Altman, Greg Brockman, Elon Musk, Ilya Sutskever, Wojciech Zaremba,

and John Schulman (Marr, 2023)", has the vision "[…] to advance digital intelligence in the way that is most likely to benefit humanity as a whole, unconstrained by a need to generate financial return." (OpenAI, 2015) and made its application ChatGPT available to the general public on November 30, 2022, for free. The general user does not need to hold a degree in computer science to gain value from this technology (Chui, Roberts, et al., 2023). Basic computer skills are more than enough to access the tools.

Lareinea Yee, senior partner at McKinsey states: "Technology is changing everything in our work and home lives." GenAI is largely responsible for statements like this and the subsequent attention of the scientific community, corporations and the general public in the potential of this technology (McKinsey, 2023b). As this thesis is being written, ChatGPT is the most prominent example of a generative artificial intelligence application that is currently available on the market. From November 2022 to January 2023, it has drawn a total of one hundred million users, and in the first five days, it has achieved over one million users, making it the consumer application that has grown at the quickest rate in history. This also reflects in ChatGPT's overwhelming popularity on Wikipedia, with 78 million cross-language pageviews to ChatGPT articles in 2023[2] . While ChatGPT serves as a compelling example of GenAI's capabilities, numerous other models are emerging, each with its unique strengths and applications. This diversity highlights the transformative potential of GenAI across various domains, such as: AI Chatbot, AI Writing, Image Generators, Design, Video Generators, Voice & Music, and others. AI Chatbots, like ChatGPT, Bard, Claude, Character.AI, currently lead the field due to the vast complexity of use-cases they can be used for. Users can create writing and content, use them for translation and paraphrasing, brainstorming, planning, data processing and analysis, as well as for general knowledge and educational purposes.

For organizations this means that task like summarizing documents or meetings, responding to questions, drafting and editing documentation, as well as classifying and

[2] Wikimedia Foundation (2023), Announcing Wikipedia's most popular articles of 2023, https://wikimediafoundation.org/news/2023/12/05/announcing-wikipedias-most-popular-articles-of-2023/, accessed 07.12.2023

categorizing information can be performed, automated and augmented by GenAI (Chui, Roberts, et al., 2023).

The rise of GenAI is not solely a technological occurrence, but rather a catalyst for a profound transformation in organisational leadership. The use of this technology offers opportunities for improved decision-making, widespread access to knowledge, enhanced communication, and the requirement for increasing leadership responsibilities. There will be a wide range of productivity gains all across organizations, starting with GenAI implemented in standard applications already used by every employee (Chui, Roberts, et al., 2023). We already see this trend for example with Microsoft implementing their Copilot within all Office applications.

2.3 Leadership – About traditional models, new leadership, and skills

Having explored the potential of GenAI in the previous chapter, we can acknowledge that it is rather a must than a maybe for leaders to explore what this technology can do for their organization (Chui, Roberts, et al., 2023). Not only is leadership crucial for implementing GenAI in organizations, GenAI itself needs leadership like the very employees that any company incorporates. The times that employees automatically perform their tasks, or simply do as they're told are over, if they even existed in the past (Werner & Arlt-Palmer, 2019). Any business, no matter the industry, can gain a significant competitive advantage through strong leadership (Pendleton & Furnham, 2012).

Yet, in rare instances is one born a leader, but leadership can be learned, optimized, and developed into a distinguished persona, especially in an era of digital transformation where emerging technologies are poised to influence the very fabric of decision-making and leadership dynamics (Werner & Arlt-Palmer, 2019). This view is particularly relevant when considering young professionals entering the workforce, highlighting a commitment to actively guiding and forming emerging talents into future leaders.

But what is leadership and why is it so important in the context of GenAI? There are different angles one can look onto leadership. Blake and Mouton's invented the 'Managerial Grid' in the 1960s that identified seven different management styles, and Reddin published the '3D-Program for Management' in 1970 that identified four different styles. The most prominent model was described by Tannenbaum und Schmidt (Werner & Arlt-

Palmer, 2019). For this study a holistic stance on analysing the following eight 'traditional' leadership styles found most in today's organizations (Werner & Arlt-Palmer, 2019) will be followed:

Autocratic Leadership: Decisions are made unilaterally with little to no input from team members.

Charismatic Leadership: Leaders use their personal charm and qualities to inspire and motivate their teams.

Democratic Leadership: Decisions are made collectively, often after gathering and evaluating team input.

Laissez-Faire Leadership: Leaders offer little guidance to the team, leaving them to make decisions.

Servant Leadership: Leaders serve their team members, helping them to excel and achieve their career and personal goals.

Situational Leadership: Leadership styles are adapted based on the situation and the competency and maturity level of the employees.

Transactional Leadership: This style focuses on trade-off, where performance is rewarded or penalized.

Transformational Leadership: Leaders inspire and motivate team members to exceed their roles by fostering a connection and selling a vision or idea.

However, historians and philosophers will likely explain it differently than management writers and the term changed greatly over the past 50 years. While leadership was mainly autocratic and based on fear or respect before the 1970s, it became transactional in the 1970s and 1980s. Just beyond the 2000s the paradigm shifted towards a more organic and inspirational approach (Pendleton & Furnham, 2012) which lead to the nowadays predominant management explanation that the concept of leadership involves inspiring and empowering individuals in order to ensure that they are able to and will contribute to the overall objectives of an organisation. (Quaquebeke & Gerpott, 2023). The primary

focus lies on guiding and developing the behaviour of an individual employee or several employees (including teams), while considering specific situations, towards a clearly defined objective. In order to accomplish this, the leader influences the attitudes and behaviours of employees, as well as the dynamics inside and across teams (Werner & Arlt-Palmer, 2019).

The three dimensions of Leadership

Pendleton and Furnham, on the other hand, argue that motivating and empowering employees towards specified objectives is only one task of leadership. They have created a model that visualizes three domains in which leadership operates: the strategic (Head), the operational (Hands) and the interpersonal (Heart) domain.

Figure 4: Pendleton's Primary Colours of Leadership model (Pendleton & Furnham, 2012, own representation)

Each of these domains plays an important role in the overall effectiveness of leadership within an organization.

The major objective in the **strategic domain** is to establish the strategic course for the organization. Pendleton refers to it as the head of the organization. It requires thorough

knowledge of the external surroundings, including political, economic, social, and technological factors. This domain focuses on the development of the organization's purpose, vision, mission, and values. It also involves establishing alignment among those working inside the organization with regards to the developed strategy, values, and goals.

The **operational domain**, also referred to as the 'hands' of an organization by Pendleton, focuses on achieving outcomes that drive the organization's purpose forward. It includes planning and organizing, whereas the high-level plans fall into the strategic domain. But more plans are broken down into objectives and tasks and they become more immediate they fall into the operational domain. The operational domain is characterized by driving work to completion, managing performance effectively, and fostering team working.

The **interpersonal domain**, or the 'heart' as Pendleton describes it, is the central aspect of an organisation and influences overall organizational climate. It is about the hearts and minds and fostering both, rational and emotional commitments of individuals towards the organisation and its goals. Establishing and maintaining connections and relationships is a key element of this field, emphasising the importance of trust and common values among all stakeholders involved.

Yet, the topic of leadership is still controversial to date. Some leaders still maintain that the success of organisations is influenced by chance to a similar extent as strategy, vision, or leadership (Pendleton & Furnham, 2012).

So, why do we really need leadership? During the early twentieth century, a period characterised by the growing impact of science and engineering following the industrial revolution, Frederick Winslow Taylor created the notion of 'scientific management'. This idea brought about a significant change in corporate management by considering workers primarily as economic entities that can be improved by rigorous selection, training, and motivation, all under the supervision of managers/leaders. Taylor said that workers typically lacked the ability to comprehend the complex nature of their duties, thus requiring strict supervision and implementation of decisions by managers (Pendleton & Furnham, 2012).

A similar notion was stated by Robert Kegan in his more recent Theory of Adult Development (Kegan, 1997). According to Kegan, 65% of adults are still on a socialized level

or below, meaning that they have learned how to do the right things because of what they have been taught, but they still search for an external authority to validate them. To achieve this validation, a leader's personal style manifests itself in various ways, since it is influenced by the unique personality of each leader and the specific circumstances they face. There is no singular leadership style that can be universally applied to every individual and situation (Werner & Arlt-Palmer, 2019).

New Leadership styles are about to emerge

However, we now find ourselves on the brink of a new (r)evolution, driven by (Generative) AI. Similar to how the industrial revolution automated manual labour, resulting in jobs that were often viewed as mundane and repetitive, the AI revolution will have a transformative impact on our lives and has the potential to free humans from such mundane tasks. AI will unleash a vast amount of human energy and capital (Taulli, 2022). It has the potential to revolutionize how we work and live - it is a true 'Game Changer' (Demary & Mertens, 2023). By automating mundane and repetitive tasks, AI frees human intellect and creativity, allowing individuals and leaders to focus on more strategic, innovative, and human-centric activities. This is so far important, as past technological trends often impacted lower skilled workers (measured by educational degree). GenAI for once has an opposite effect and will probably automate 57 percent of the tasks performed by employees with Master's, PhD, or higher education. While the automation rate without GenAI would be just around 28 percent (Chui, Hazan, et al., 2023).

In his exploration of AI's potential and challenges, Taulli identifies a crucial aspect often overlooked in the discourse surrounding AI adoption. He states, that the biggest obstacle limiting the widespread use of AI technology is our shared intellectual framework, encompassing education, understanding, and creativity (Taulli, 2022). This perspective shifts the focus from technological constraints to the more human elements of knowledge and conceptualization. Furthermore, it underscores the importance of fostering a widespread understanding of AI, not just among technologists but across all levels of society and business. The development of an informed and creative workforce will be a vital part of future leadership to fully harnessing the capabilities of AI. GenAI enables humans to allocate more time to creative, strategic, and complex problem-solving tasks. These tasks need emotional intelligence, ethical judgement, and creative thinking, which are

abilities that are beyond the capabilities of AI (Taulli, 2022). Or in other words, GenAI has the potential to impact all three domains of Pendletons model, but its influence might be most directly observable in the operational and interpersonal domains due to the immediate efficiency gains and process improvements. However, the strategic domain can also significantly benefit from predictive capabilities and data analysis.

«I was literally like, wait a minute, this is the first tool as a leader, a manager, a CEO that I have ever used, that gave me back the one thing I could never create more of, and that is time…»

Bob Higgins, President/CEO at Barge Design Solutions, Inc., in his welcoming speech for "Generative AI for Leaders" by Vanderbilt University, accessed 03.12.2023.

This shift has major implications for the fundamental structure of Taylor's scientific management theory and leaders are well advised to adopt new forms of leadership if they want to navigate the digital transformation, new technologies and new forms of work (e.g. remote working and collaboration) effectively (Helmold, 2022). While Taylorism diminished the significance of human judgement and creativity, in order to prioritise efficiency and uniformity, GenAI facilitates new styles of leadership that highlight these uniquely human characteristics. This reflects in the view that the majority of leaders and scholars currently share, and who believe that while AI will take over most managerial tasks, while the interpersonal domain will likely never fall into the hands of AI (Quaquebeke & Gerpott, 2023).

The concept of New Leadership refers to a current approach to management that encompasses several leadership styles such as Agile Leadership, Shared Leadership, and Digital Leadership (Helmold, 2022). It is characterized by its focus on empowerment, trust, and open communication, which contrasts with traditional leadership styles that emphasise control and authority. This approach is increasingly relevant in today's changing work environments influenced by digitalization and fosters an inclusive and motivating atmosphere, recognizing the unique contributions and needs of diverse employees (Helmold, 2022). Leaders have to have a significant level of boldness and confidence in order to successfully apply these approaches. As a consequence, Leaderships' previously exclusive knowledge is now available to all members of an organisation, and as a

result, all businesses are increasingly more transparent and truthful, maybe even than they would like to be (Werner & Arlt-Palmer, 2019). The objective of New Leadership is to establish flat or horizontal organizational structures and to transform conventional leadership from its role as a commander towards the position of a supportive coach (Helmold, 2022). This shift will be accelerated by digital solutions such as GenAI, and it is anticipated that organizations will require fewer human leaders. This is due to the fact that AI is capable of easily performing tasks that are often associated with low- to mid-level management functions (Quaquebeke & Gerpott, 2023). Despite the widespread notion that artificial intelligence could one day replace humans in the operational domain (Quaquebeke & Gerpott, 2023), GenAI does not simply outperform humans out of the box. Prompts that are fed into an GenAI system need to be carefully crafted and developed, and the data must be optimized. Therefore, future AI leaders will need to shift their focus to guiding the AI-Agents that lead the human workforce. And in order to do so, they will need to have a profound understanding of how both humans and AI operate (Quaquebeke & Gerpott, 2023). Additionally, organizations should be 'data economy ready' in order to deliver the desired outcome (Demary & Mertens, 2023). This competency takes into account the knowledge and skills that a company possesses in the areas of data management, data storage, and data utilization. In order to successfully participate in data ecosystems and ensure efficient use of artificial intelligence, it is absolutely important to possess those competencies. In the year 2022, a survey was conducted among companies that were operating in the industrial sector and related services. The findings of the survey revealed that just 31 percent of these companies were 'data economy ready' (Demary & Mertens, 2023). It is important to cultivate a data-driven culture within the organization. In such a culture, data significance is not just a topic people constantly talk about; it's a deep understanding. Employees and leaders alike recognize the availability, importance, formats, and limitations of various types of data (Sinha & Al Huraimel, 2020). They are skilled at interpreting data and forming it to informed decisions, thereby enhancing the organization's overall responsiveness and agility.

All this makes it important for professionals in leadership roles to adjust their set of skills. In a recent University of Southern California study from 2023, business practitioners that regularly use GenAI have been surveyed in order to analyse what skills become more important (Cardon et al., 2023). The study names integrity, strategic vision, interpersonal

skills, innovation and creativity, and inspiration as the top five competencies needed in the age of AI. Figure 5 has been extracted from their study and gives an overview of the expected changes in skill priority after implementing GenAI in regular operations.

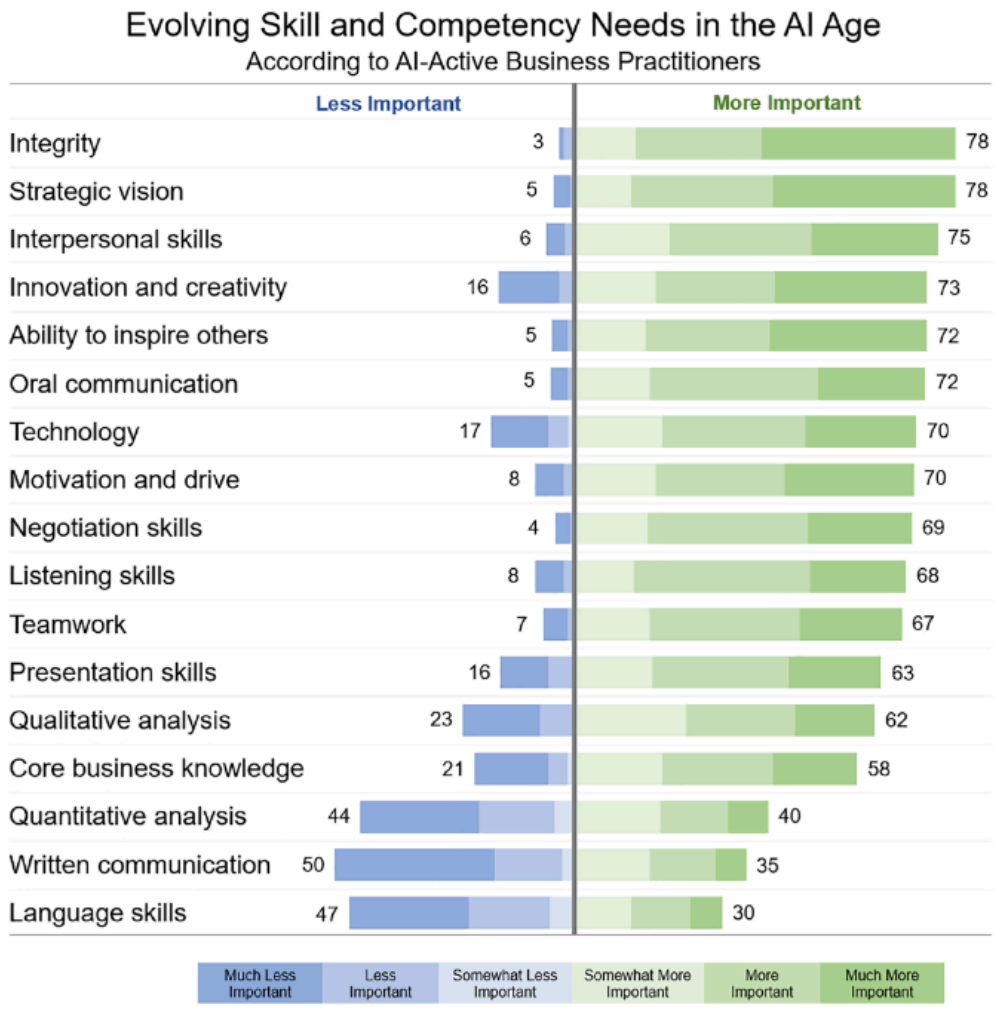

Figure 5: Skills needed according to Cardon et al (Source: (Cardon et al., 2023))

These insights align well with the New Leadership principles. Integrity can be articulated as the foundation of a trust culture, ensuring the ethical use of GenAI, and fostering genuine relationships. A strategic vision helps leaders steering their teams through this rapidly evolving landscape and aligning the technology with the organizational goals. As

mentioned already, interpersonal skills are vital to grow open communication and collaboration. Innovation and creativity enable leaders to take full advantage of GenAI and foster an environment which embraces change and experimentation. And Inspiration equips leaders to motivate their teams, driving engagement and commitment to the shared cause.

While there is a growing consensus between scholars and experts that GenAI will likely have a significant impact on high-skilled leadership roles, the current research that investigates the impact on these roles is limited. The current literature primarily focuses on the technical capabilities and business cases of GenAI, with less emphasis on how it intersects with the nuances of human-centric leadership. This study investigates the experiences and perceptions that leaders have had up to this point and provides an insight on possible future scenarios.

3 Methodology

The objective of this research was to explore how leaders of modern organizations are impacted and influenced by the introduction of GenAI in their leadership workflows. The qualitative interviews were designed around the research questions formulated in chapter 3.1. By analysing how mature leaders are in adopting this novel technology, the study sought to identify the awareness of leaders and managers towards the impact on their daily tasks. The gained perspectives were meant to further identify how certain characteristics might be influenced and/or augmented by using GenAI's capabilities to analyse big data and presenting them in an appropriate and efficient way. While considering every gather input as highly valuable the research acknowledges that the implementation varies across management levels and the author assumed that top-management might have advanced insights on this topic, due to their more strategic stance.

The author sought to gather a brought range of leadership professionals and tapped into his network build over more than two decades of experience in the Mobility Technology industry. The interviewed professionals have a varying background in Mobility, Business Consulting and Strategy, as well as Technology (e.g. FinTech, Medical). Chapter 3.2.2 provides deeper insights about the selected interviewees.

3.1 Research questions

How do specific generative capabilities of AI challenge current leadership styles within modern business environments?

- Sub research question 1: What is the current status of generative AI adoption in modern corporations, especially in leadership roles?
- Sub research question 2: What characteristics of leadership in modern businesses might be most influenced or augmented by the implementation of generative AI?
- Sub research question 3: What practical strategies and recommendations can be derived for leaders to harness the potential of generative AI in their roles?

3.2 Data Collection Process: Qualitative Research

The qualitative research is based on semi-structured expert interviews as described by Mayer (Mayer, 2013). As experts are usually found in a variety of organizational levels, a divers set of professionals has been selected, ranging from mid-level managers to C-level executives at both start-ups and established, multinational corporations to experts in leadership training and innovative technologies.

The interviews were designed with medium standardization, to ensure flexibility for both participants. A medium standardization means that a framework of questions is provided but the answers are left open (Mayer, 2013). This approach was chosen, given the exploratory nature of this study, as it gives the possibility to also ask questions that are not listed in the guide. For example, to inquire more specification about facts (Kollmann et al., 2016). This flexibility creates good conditions to promote an open and natural course of conversation and is useful for raising subjective views of the interviewees on the subject of GenAI. The interview time was approximately 30-60 minutes per individual expert interview.

3.2.1 Development of interview questions

The development of interview questions was inspired by the Design Thinking process as described in "The Design Thinking Playbook" (Lewrick et al., 2020). This provided a framework that aligns with the iterative, human-centred approach necessary for crafting questions that would recognize the varied expertise and experiences of the participants. Rather than employing a single, static set of questions, the author has crafted customized guides for each interview, ensuring that the questions are relevant and appropriate to the interviewee's background and knowledge level.

One particular challenge of this type of interviews is to guide the interviewee with the framework, but not to limiting the interviewee in order to avoid answers being based solely on these defined questions. The idea is to not only gather information about current challenges and problems but shed light onto the future of leadership.

While the core phases of Design Thinking (Empathize, Define, Ideate, Prototype, and Test) served as a guiding structure, the process was tailored to fit the specific context

and objectives of this research. The adaptability of Design Thinking allowed for modifications that better served the exploratory nature of the thesis.

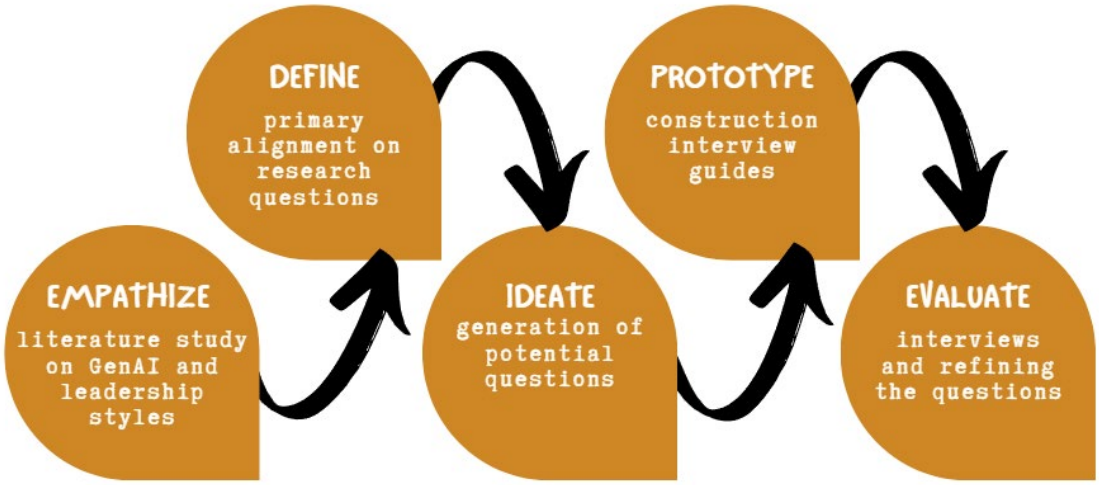

Figure 6: Methodology: Interview questions (own representation)

Empathize and Define: The process began with an Empathize phase, where a literature research and initial conversations with industry professionals helped to gain insights into GenAI in leadership roles. This process step was already explained in detail in chapter 2.1

This laid the foundation for the Define phase, where the primary structure of the interview catalogue was articulated. This catalogue aligns with the research questions described in 3.1..

Ideate: Following this, an Ideate stage fostered the creative generation of potential questions. This brainstorming phase, based on the state of the art, preliminary literature study (see chapter 2), as well as out-of-the-box thinking, ensured the development of a structured format (see ANNEX II: Interview Catalogue) that covered a wide range of interview questions.

Prototype: In the Prototype phase the prior defined questions were developed into a structured, individual field manual (see ANNEX I: Interview Field Manual Samples) that guided the semi-structured interviews. These field manuals were evaluated and refined iteratively (see next phase), based on the insights gained from the expert interviews.

Evaluate: The last step was the Evaluate phase, which involved using the field manuals in interviews and refining them further based on the quality and depth of the information gathered. This phase was iterative. Each interview provided new data that prompted additional refinement of the questions or the approach.

3.2.2 Selection of interview partners and confidentiality

In order to be able to conduct the expert interviews, it is also necessary to clarify what experts are. "An expert is someone who has a clear and accessible knowledge in a limited field. His views are based on certain claims, and his judgments are not mere rhetoric or non-binding assumptions." (Mayer, 2013).

The selection of interview partners for this research was carried out strategically, taking into account the limited three-month length of the master's thesis. Ten interviews were performed, ensuring both time efficiency and the acquisition of sufficient research-related data. The selection procedure primarily targeted individuals occupying positions ranging from mid-level to C-level, with a particular emphasis on sufficient leadership experience and technology-oriented companies. This encompassed individuals from both emerging start-ups and well-established, global enterprises, with a notable presence from Siemens, leveraging the accessibility and the authors network within this organization. The purpose of this specific selection was to guarantee a certain uniformity within the limited sample size, thereby enhancing the comparability of the interview outcomes.

Regarding confidentiality, despite the fact that most respondents agreed to have their statements and direct quotations published, it was decided to anonymize all statements. This strategy was used due to multiple rationales. First and foremost, it ensured uniformity throughout all interviews, so preventing the anonymous interviewee from being easily distinguished. Furthermore, it fulfilled an ethical obligation towards all participants by ensuring the protection of their privacy and promoting transparency in their responses. Nevertheless, this process of anonymization does recognise a constraint in the credibility of the research results, due to the specific group of participants and the absence of explicit identification. However, these procedures were considered essential and suitable considering the extent of the research and the ethical factors at play.

The experts have been selected according to the following criteria:

- Interviewees must currently hold a leadership position, or
- Interviewees must have equivalent leadership experience of >10 years.
- Interviewees must work in a technology focused environment.
- Interviewees must have gained experience and have worked with GenAI for >6 months and are familiar with the basics of the technology.

Table 3 shows an overview of the interviewees and criteria.

Table 3: Interviewee Overview

ID	Industry	Position	Leadership Experience *	Interview Length (hrs:min:sec)
Int_01	Mobility	Middle Manager	>10 years	00:49:22
Int_02	Business, and professional services	Senior Manager	>10 years	00:53:31
Int_03	Technology	C-Level Manager	1-5 years	00:56:08
Int_04	Mobility	Middle Manager	1-5 years	00:48:02
Int_05	Technology	C-Level Manager	>10 years	01:09:03
Int_06	Business, and professional services	C-Level Manager	>10 years	00:48:39
Int_07	Technology	C-Level Manager	5-10 years	01:03:01
Int_08	Business, and professional services	C-Level Manager	>10 years	00:51:46
Int_09	Technology	Senior Manager	5-10 years	00:27:32
Int_10	Technology	Middle Manager	1-5 years	01:02:55

*Leadership experience refers to experience on current level. The overall experience differs from the mentioned years.

Middle Managers are those who are between the top (Board/C-Suite) and the lowest management level (e.g. Team Leader), i.e. the department and area managers and project managers at the same level.

Senior Managers are operating on a more strategic level, and mainly in support functions. They usually have more than 10 years of leadership experience and are specialized in a particular area of their organization.

C-Level Managers, occupy the highest strategic positions inside an organisation. These positions may encompass the CEO (Chief Executive Officer), CTO (Chief Technology

Officer), CFO (Chief Financial Officer), and various more. Their role involves overseeing significant corporate decisions, operations, and overall focus on strategy.

3.2.3 Transcription of interviews

The transcripts and recordings of the interviews are stored on the author's IT infrastructure. No external access is granted to it except for the transcription software used (see ANNEX III: Used Software).

The transcription of the interviews is a requirement for this master's thesis and helps to minimize misinterpretations. For the research question in this master's thesis, nonverbal communication plays a subordinate role and was not analysed. Therefore, the interviews are transcribed for meaning. The transcription was carried out in a simplified matter but to fixed rules according to Fuß and Karbach (Fuß & Karbach, 2019), which ensures easy readability and comprehensibility:

- Speech pauses and their lengths, repetitions, clearing of the throat, etc., are not transcribed.
- Filler words such as 'uhm' and 'hmm' are not transcribed.
- Word and sentence breaks are smoothed over or omitted.
- Parts of the conversation that do not relate to the content level of the focus of the conversation are removed.
- Grammatical errors in speech are maintained and not corrected.
- Punctuation is corrected by the author situational, but not in general.
- Each contribution is marked with a new paragraph and a time stamp.
- Interview partners are identified according to confidentiality rules in Chapter 1 with an ID (see above Table 3). The author receives the ID Aut_01.
- Relevant sections derived from German interviews were translated using AI-based software (see ANNEX III: Used Software).

An AI-based speech recognition program is used for transcription (see ANNEX III: Used Software). To comply with the above rules and because the speech recognition program has a certain error rate, the transcripts are manually edited afterwards.

3.2.4 Data analysis of interviews

The interview data was analysed using the software f4analyse (see ANNEX III: Used Software). The processes involved importing the data, becoming familiar with it, performing initial coding, searching for findings as well as sections that were relevant, writing the results, and reviewing them. The interview catalogue and the categories that were established during the process of creating the catalogue have been aligned with the codes.

Table 4: Categories and codes

ID	Description	ID	Description
IoL	Impact on Leadership	Ch_I	Implementation challenges
LoC	Level of Comfort	Ch_C	Current challenges
LE	Leadership experience	UC	Use-Cases
Out	Outlook	MiLS	Most important leadership skills
IAI	Interest in AI	Mat	Maturity
H2I	How to Implement	CiLS	Changes in Leadership Styles

4 Findings

In this chapter, the interview results are presented. It was determined which impact AI's generative capabilities may have on leadership styles within modern, technology focused businesses. The presentation of the results takes the research questions (refer to 3.1), as well as the interview outcomes and the information gained from the literature research. The interview results are organized by categories and key findings. Each category/key finding forms a subchapter and have been supplemented with examples extracted from the interviews.

4.1 Current status of generative AI adoption in modern corporations, especially in leadership roles

This chapter presents findings to target sub-research question 1 "What is the current status of generative AI adoption in modern corporations, especially in leadership roles?". The interview questions were designed to extract insights on three critical aspects: the comfort level of leaders with integrating GenAI into their leadership tasks, the overall maturity of their organizations in implementing GenAI within leadership roles, and the influence of GenAI on their leadership styles.

The results show that all leadership professionals have already gathered experiences with GenAI tools. This is a rather fascinating finding, given the relatively short time of general availability of this technology. It was often reported though that the adoption of GenAI is so far limited to productive and administrative efficiency gains, rather than on true leadership topics. Nonetheless, every interviewed leader considers the organizational adoption a leadership responsibility as they need to direct the rest of the organization into using the relevant tools and creating the needed mindset. More frequent users are about to identify the benefits generative AI can have on leadership and are eager to identify use-cases which may liberate them and prepare them for challenging topics.

Understanding how comfortable leaders (chapter 4.1.1) are with the idea of integrating GenAI into their tasks provides insight into the current acceptance levels of the technology in leadership practices. This metric can indicate readiness for adoption and potential resistance areas and reveal areas where further education or development is needed.

The Impact (chapter 4.1.2) examines how the focus shifts to the practical implications of GenAI on leadership styles and how GenAI is reshaping individual leadership approaches, decision-making processes, and the perception of interpersonal dynamics within teams and organizations.

By assessing the maturity of the organization (chapter 4.1.3), we receive a metric of how advanced an organization is in the adoption of generative AI for leadership functions. It evaluates the maturity level of these organizations in terms of infrastructure, strategy, and culture adaptation concerning GenAI usage.

Figure 7 provides an overview of the interview results categorized and displayed on a scale of 1 to 5. It shows of how different factors such as management level, industry, and geographical region influence these factors.

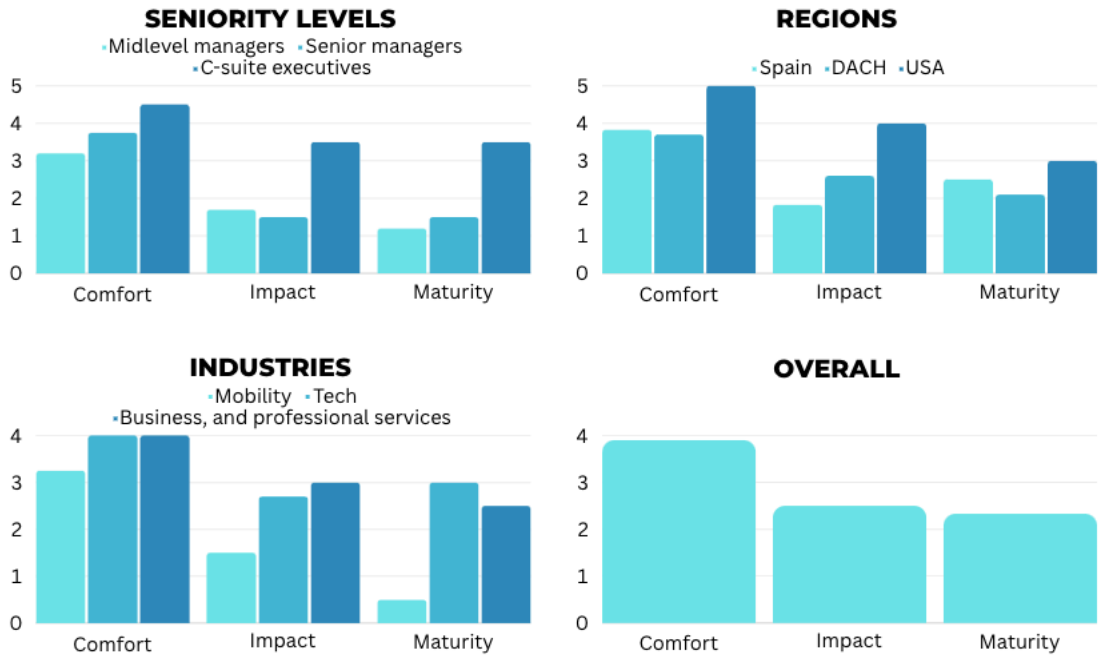

Figure 7: Reported Comfort, Impact and Maturity of GenAI

The survey sample includes respondents from 3 different regions: Spain, DACH (Germany, Austria, Switzerland), and the USA. In total n=10 participants at all management levels have been interviewed. More details about the selected interview experts are given in chapter 3.2.2.

The adoption of GenAI in leadership roles is not without challenges, a theme that emerged consistently across interviews. Challenges during GenAI adoption (chapter 4.1.4) primarily circle around three areas: technological, personal, and organizational. This chapter delves into these challenges, providing insights into how leaders are navigating the complexities of integrating GenAI into their frameworks.

The exploration of practical use-cases (chapter 4.1.5) illustrates how GenAI is being applied in real-world leadership scenarios. The interviews revealed a range of innovative applications of GenAI that extend beyond mere operational efficiency. These include using GenAI for predictive analytics in strategic planning, personalized employee engagement and development, and enhanced decision-making through data-driven insights.

Finally, in Chapter 4.1.6, the focus shifts to identifying the Most Impacted Leadership Styles due to the advent of GenAI. The findings suggest a significant impact on more dynamic and adaptable leadership styles, such as transformational and situational leadership. GenAI's data-driven approach is seen to complement these styles by providing leaders with deeper insights and foresight, enabling them to be more responsive to their team's needs and the external environment. Conversely, more traditional, hierarchical leadership styles may face challenges, as GenAI promotes a more collaborative and inclusive approach to decision-making. This chapter critically analyses how different leadership styles are evolving in response to GenAI, highlighting a trend towards more agile, empathetic, and informed leadership practices in the era of digital transformation.

4.1.1 Level of comfort

Question

On a scale from 1 to 5, where 1 represents 'not comfortable at all' and 5 represents 'extremely comfortable', how would you rate your comfort level with the idea of integrating Generative AI into your leadership tasks?

Results

The average comfort level with the implementation of GenAI is 3.88 out of 5, as reported in all interviews. However, when analysed by management level and geographical region, this average varies notable. Mid-level managers have a decreased level of comfort at 3.17, in contrast to senior managers at 3.75 and C-level managers at 4.5. Furthermore, a geographical examination indicates that managers in the United States display the greatest degree of comfort, scoring 5, in contrast to their counterparts in the DACH region (Germany, Austria, Switzerland) who score 3.7, and Spain who score 3.8. This suggests a greater willingness among US managers to embrace the implementation of GenAI.

Interestingly, the comfort level with GenAI does not significantly differ across industries, although some variations are notable. The mobility industry registers a slightly lower comfort level at 3.25, compared to technology at 4 and business and professional services at 4.25. This suggests that while industry-specific factors do play a role, they are not as decisive as the leadership level or geographical location in determining comfort levels with GenAI adoption.

Despite the fact that they are the operational backbone of organisations, mid-level managers like Int_01 and Int_04 have the lowest level of comfort with GenAI. The perspective that Int_01 (Ex_1.1) takes towards relying on GenAI for his day-to-day work is one that is cautious but optimistic with regard to the situation. This demonstrates that they are open to incorporating GenAI into business processes in the future, as indicated by their desire to increase their reliance on it after a few good experiences. As a result, we can conclude that their current level of comfort is moderate, which indicates that they are prepared to adopt GenAI that has been demonstrated to be effective. However, there is a significant amount of uncertainty and ambivalence over the implementation of GenAI, as demonstrated by Int_04 (Ex_1.2). They do not express a clear stance on whether they would be comfortable or not, suggesting a neutral or undecided position. An attitude that is cautious, if not sceptical, which is indicated by the fact that potential negative instances from the first few years of operation, as well as worries regarding human-centeredness and the loss of management power. Their degree of comfort appears to be somewhere in the middle, anywhere from a 2.5 to a 3, which indicates that they have substantial reservations and are taking a wait-and-see attitude. The hesitations of both leaders' stem

from their proximity to day-to-day operations, making them acutely aware of the immediate risks and practical challenges associated with GenAI integration. They also navigate the complexities involved in translating strategic decisions into actionable tasks, heightening their awareness of change management processes.

Senior and C-level managers, involved in more strategic functions, exhibit higher comfort levels. Their roles in long-term planning and decision-making, combined with greater access to resources, bolster their confidence in integrating GenAI, as long as they maintain the final say (see Ex_1.3). The statement from Int_03 (Ex_1.4), a C-level manager, emphasises that C-levels' broader organizational view and emphasis on innovation further enhance their readiness to adopt such technologies earlier compared to lower management levels.

Examples		
"So, I would say that in order for me to rely on making decisions based on this data, on those AIs. I would need to have it proven for some time. So, I would say I'm more 3 to 4 right now. But I'm sure that the moment that I rely two or three, four or five times on the AI and I see that "Hey. Yeah. This is spot on!", or at least it's giving me the information I need. I would definitely jump into it. Again, the ultimate call and the ultimate decision is on me, but I would rely more and more on that."	Int_01 Paragraph 30	Ex_1.1
"I honestly don't know. So, if you ask me directly, I can't tell you now whether I would be super happy or super unhappy. I think that's a new field to go into. (…) I'm sure there will be a lot of negative examples in the first 3 to 4 years, because you always look at the negative, not the positive. But I could also imagine a working world where people might do things like that if the whole thing were transparent. I think so. Something has happened. No. I think we're just too human-centred for that. And as a result, the existing world of managers would also be reluctant to hand over such issues because it is also a loss of power."	Int_04 Paragraph 29	Ex_1.2
"Yeah. I mean, as I said (…). We have the final say in some ways, you know."	Int_08 Paragraph 46	Ex_1.3
"We use generative AI for forecasting very, very strongly in our day-to-day business. We use generative AI for example, for proof checking, for fact checking."	Int_03, Paragraph 45	Ex_1.4

4.1.2 Impact on Leadership style

Question

On a scale from 1 to 5, where 1 represents minimal or no impact and 5 signifies a complete transformation of your leadership approach, how would you rate the impact of generative AI on your leadership style?

Results

The insights gathered from the interview show that the impact of generative AI on leadership styles is marked by a trend of evolution rather than revolution. The interviewed leaders perceive GenAI as a tool that enhances, supports, and complements existing leadership styles rather than fundamentally altering them. This reflects in the overall medium impact rating of 2.5 out of 5 across all interviews.

The average impact rating of 3.5 for C-level managers suggests that they perceive a greater influence of GenAI on their leadership styles compared to mid-level (1.67) and senior managers (1.75). This higher perception could be attributed to the higher technological adoption in their daily tasks considered to the lower management levels interviewed.

The impact rating of 4 for US managers compared to 2.6 for those in the DACH region and 1.8 for Spanish managers indicates a regional disparity in how GenAI's influence on leadership is perceived. This could be influenced by cultural mindset towards AI, and the regulatory environment in these regions.

The relatively lower impact rating in the Mobility industry (1.5) compared to Technology (2.7) and Business and Professional Services (3) might be due to the limited adoption of GenAI in the current leadership tasks within the Mobility sector. This suggests that the perceived impact of GenAI is closely tied to its practical applications and relevance to industry-specific challenges, as the Mobility industry is highly regulated and generally behind other industries in the adoption of new technologies.

Int_01 (Ex_1.5) and Int_02 (Ex_1.6) illustrate how GenAI supports them and aids in refining communication and supporting visionary aspects of leadership. By streamlining

processes and aiding in the articulation of goals and visions, GenAI emerges as a powerful assistant, augmenting the cognitive and communicative capabilities of leaders. But it does not yet change their leadership style.

Int_06's perspective (Ex_1.8) shows an enduring truth in leadership, its human-centric nature. While GenAI elevates the practical aspects of leadership, the essence of human interaction, empathy, and understanding remains the cornerstone. GenAI, is seen as a tool that enriches the human element rather than completely changing it. But it is considered as freeing, as managerial tasks are simplified and more time for human-centric actions is available.

Int_05 (Ex_1.7) and Int_10's ratings (Ex_1.9) reflect a moderate impact of GenAI on their current leadership styles. They recognize the benefits of GenAI but also understand that its full potential in revolutionizing leadership is yet to be realized. This viewpoint suggests that the future might hold more significant changes as GenAI evolves and becomes more integrated into leadership practices.

The interviews draw a balanced picture, and there is an overall consensus among all of the leaders who were questioned that GenAI serves more as an enabler than a disruptor. The ability of GenAI to take over routine, data-driven, and administrative activities enable leaders to devote more time and energy to areas where the human touch is essential. This, in turn, enables them to emphasis on basic leadership skills such as motivating and guiding others to succeed.

Examples		
"I don't see AI changing the style. (…) I think it will help me. Kind of like maintaining control and maintaining facts on how things are evolving. (…) I don't think AI would change your style. Your style is yours. It just can help you in the right way, in the wrong way, in a way, but not change your style."	Int_01 Paragraph 52	Ex_1.5
"Generative AI will not directly change any of those styles, but it would somehow support and impact them. And in a way, the thing that we need to be aware of is how does generative AI influence these different states? But it's not like that it is really threatening any of those styles because every style has their meaning and their purpose."	Int_02 Paragraph 21	Ex_1.6
"I believe that AI tooling at this point in time has not yet (…) reached the level it can. I therefore think I'm, even though I'm very bullish as you've probably noticed on the impact of	Int_05 Paragraph 74	Ex_1.7

generative AI, I would place it at a two at this point in time because I believe there's a lot more that is going to happen."		
"I mean, because on the one hand, leadership is leadership is about humans. And it's always been that. And it's not changed since the dawn of time in the sense that it's about human, but with the tools available, with what AI is capable now even, you know, fast forward few years into the future (…) it's elevated the role of the humans, but it also has elevated the need to focus on the human as a leader."	Int_06 Paragraph 62	Ex_1.8
"(…) because I've used the generative AI more for my tasks as a worker, not for my role as a leader"	Int_10 Paragraph 28	Ex_1.9

4.1.3 Maturity of implementation

Question

On a scale of 1-5, how would you rate your organization's overall maturity in implementing generative AI in leadership roles?

Results

The integration of GenAI in leadership roles varies significantly across different organizations, as evident from the interviews. Each leader provided unique insights into the current state and future potential of GenAI in their respective organizations, reflecting a spectrum of maturity levels and challenges. These diverse experiences highlight the need for tailored strategies that consider the unique circumstances of each organization, including its readiness, regulatory environment, and strategic objectives. The assessment reveals a relatively low overall level, with an average rating of 2.3 out of 5. This indicates that while there is some progress in the adoption of GenAI, it is not yet extensively integrated or matured in leadership practices.

The analysis also shows significant variations in perceived maturity across different management levels, geographical regions, and industries. C-Level managers' average rating of 3.5 suggests they perceive their organizations as more mature in GenAI adoption compared to Senior (1.75) and Middle Managers (1.17). This higher assessment may stem from C-level executives' involvement in strategic decisions and broader organizational initiatives, where the integration of GenAI might be more apparent and prioritized.

This can be implied by Int_03's statement (Ex_1.11), who rates their organization's maturity in GenAI implementation as high, indicating significant progress in integrating GenAI into leadership processes.

Senior and Middle Manager on the other hand are usually confronted with bigger data problems, and struggle to find the correct data, as Int_01 (Ex_1.10) acknowledges. While they see the potential of GenAI, they admit their organization is not yet ready to fully utilize it. The emphasis is on the importance of data preparation and digitalization before GenAI can be effectively implemented, suggesting a preparatory phase for GenAI integration.

A maturity rating of 3 by managers in the United States, in contrast to a rating of 2.5 in Spain and 2.1 in the DACH region, illustrates a slight regional variance. However, by focusing on Spain, we are able to gain a better understanding of the dynamics of technological adoption based on the size and structure of the organization. The interviews offer light on a varying technical landscape, in which smaller, more agile organizations are able to rapidly adopt GenAI and rank their maturity as 4, whilst larger, more established corporations appear to struggle and estimate their maturity as 1.75.

While the Mobility industry has a far lower maturity level of 0.5, the Technology industry, and the Business and Professional Services industry show greater maturity levels of 3 and 2.5, respectively. The particularly low rating in the Mobility industry can be attributed to specific challenges that were encountered by the interviewees. For example, Int_04's organisation was unable to move forward with GenAI activities because of legal and compliance issues (Ex_1.12), and Int_01 did not have a sufficient data readiness to make effective use of GenAI.

Examples		
"We're defining the data that we will be consuming. So right now, I feel sometimes that it will be very helpful (…), but only when we have completed our job to bring data together and having all the digitalization that we are looking at. So, I would say that today I would love to use it. But I don't think we are ready yet to use it."	Int_01 Paragraph 14	Ex_1.10
"We use generative AI for forecasting very, very strongly in our day-to-day business. (…) I mean like these products	Int_03 Paragraph 47	Ex_1.11

have been rolled out like max two months. So, these products did not exist before."		
"We are currently at an absolute standstill in everything to do with generative AI. In other words, the committee work is primarily the legal departments, of course, copyright, data protection, so we are currently unable to implement any activities in the area of generative AI."	Int_04 Paragraph 15	Ex_1.12

4.1.4 Challenges during GenAI adoption

Question

What are the main obstacles you've encountered in implementing generative AI in leadership roles?

Results

According to the leaders who participated in the interviews, the adoption of GenAI in leadership roles provides a wide variety of problems. These challenges are multifaceted, reflecting the complexity of integrating advanced AI technologies into the dynamic landscape of leadership.

A summary of the personal, technological, and organisational challenges that were mentioned by the leaders who were questioned is presented in Figure 8.

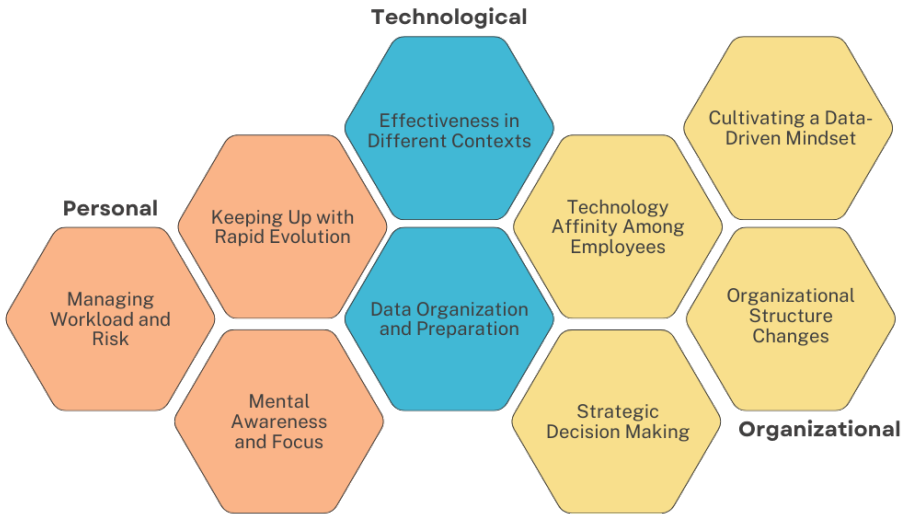

Figure 8: Challenges with GenAI adoption (own representation)

Keeping Up with Rapid Evolution: Int_05 (Ex_1.13) highlights how challenging it is to stay up with the development of GenAI. Leaders face a higher pressure of being knowledgeable and skilled. Continuous education and adaptation are required as a result of this.

Effectiveness in Different Contexts: Int_08 (Ex_1.14) has discovered higher effectiveness of ChatGPT in creative tasks like ideation. They, however, has come to the realisation that the performance in resolving particular business issues can be less successful and even distracting at times. It is clear from this that there is a difficulty in determining where and how GenAI can be implemented in the most beneficial manner.

Technology Affinity Among Employees: An issue that arises when attempting to adopt GenAI in an equal manner across the workforce is the uneven distribution of the technological affinity. Int_09 (Ex_1.15) observed an unanticipated disparity in the level of technological expertise among younger (namely GenZ) employees. While there are some employees who have great skills, there are others who are hesitant to use GenAI. To bridge this gap, leader need to foster strategies such as gentle encouragement and cultivate a culture of collaborative exploration, where teams are collectively motivated to take the first steps in utilizing GenAI.

Strategic Decision Making: Int_10 (Ex_1.16) examines the difficulties that arise when making strategic decisions on the distribution of resources and the overall strategy of the company. The increased productivity that is a direct result of the implementation of GenAI leads to challenging decisions about the possibility of reducing workforce, increasing workload, or entering new markets.

Organizational Structure Changes: Int_10 (Ex_1.17) also notes the challenge for leaders to understand and adjust to the new organizational needs, such as potentially needing less tech-focused roles, as tool become more standardized and easier to handle. In contrast, he observes a rise in the amount of time spent on product development and strategy.

Data Organization and Preparation: Int_01 (Ex_1.18) emphasises the challenge of having data that is either not organised or not prepared for successful application of GenAI. In order to make data relevant for the use of GenAI, the issue comes in preparing

and structuring the data beforehand. This demonstrates the before mentioned low rate of data economy readiness within organizations.

Cultivating a Data-Driven Mindset: In addition to the difficulties associated with data, Int_01 (Ex_1.19) emphasises the importance of cultivating a data-driven mindset within the organization. As part of this, it is necessary to make certain that all stakeholders comprehend and appreciate the significance of data.

Managing Workload and Risk: When it comes to managing workload and risks, Int_05 (Ex_1.20) demonstrates an overwhelming pressure in his ability to handle the adoption of GenAI in addition to their many other responsibilities. Additionally, they emphasise that the implementation is associated with a wide variety of additional risks that they need to take into consideration.

Mental Awareness and Focus: Int_09 (Ex_1.21) identifies a personal challenge that consists of the requirement to remain mentally sharp and concentrated, particularly in an environment where GenAI tools are capable of handling a variety of jobs. Given that AI is now capable of taking over administrative responsibilities, it is reasonable to assume that there is a greater emphasis placed on achieving perfection. Keeping oneself ahead of the competition and making contributions that are relevant in such a setting appears to be a substantial mental effort.

Examples		
"Hence generative AI is such a big push for us in that we it's actually quite challenging because we have to stay up to date on the extremely high frequency evolution in generative AI, and that has implications for us on the engineering side as well." (Int_05, Paragraph 2)	Int_05 Paragraph 5	Ex_1.13
"With ChatGPT, you've had a 40% performance increase. But the type of task when it was business problem solving, it actually went down. So, it's like for creation and fun and new things it's awesome. And I mean, for actual real problem solving, it can actually be distracting."	Int_08 Paragraph 80	Ex_1.14
"I also notice, and I find this partly surprising because you often hear various hypotheses about Gen Z, that the technology affinity, which I would have expected based on what is often said, is very unevenly distributed on this topic. There are some who use it to the maximum and do a lot	Int_09 Paragraph 30	Ex_1.15

with it. But there are actually also people in their mid-20s who somehow have reservations about it, which I find quite astonishing, and I try to guide them more like I would with someone who is five years away from retirement."		
"To be able to measure resources, to measure the need of resources. I mean, as a CTO, for example. When is the time to start firing employees because they are 50% more effective using AI? Or should we change the strategy of the company? Because it's like having now twice of the employees we need so we can get more work or now open new markets. That's for me, one of the main (challenge)"	Int_10 Paragraph 46	Ex_1.16
"Maybe I don't need so many coders now, but I need more product guys. And that's another challenge for leaders that need to understand the new organisation needed thanks to Generative AI, this is only an intuition, but I can feel that strategy product business are going to increase their, I don't know how to say, the importance for the company while technology and for, I can see a reduction in the tech teams in companies because as I said we have more standardised tools to build technology on top of."	Int_10 Paragraph 50	Ex_1.17
"In the environment we work, there's not yet such an amount of data that we can (…) sorry, the data is there! It's not properly organized. (…) The processes or the knowhow is not there yet. (…) So, I think we first we need to do our homework, be prepared, and then jump into the AI."	Int_01 Paragraph 18	Ex_1.18
"I think what I was commenting before is having the data organize in proper ways or accessible, having everybody having the mindset for that data. It's kind of like very important one of the most important activities we do. And so, once we have that, once we have this mindset, the tools, simply the buy-in from the organization, then we will start generating more data that then we can use, and we can benefit from using techniques like AI."	Int_01 Paragraph 20	Ex_1.19
"It tends to get overwhelming for me, particularly because there is a mountain of stuff that I need to handle. It creates a lot of common risk in the company, which we would like to sort of mitigate as best as possible as we grow so that it's not just me who is relied upon for those activities."	Int_05 Paragraph 40	Ex_1.20
"I actually need to be mentally sharp if I want to make a difference now, especially considering the tools that can already do so much. I really need to be mentally fit, truly	Int_09 Paragraph 50	Ex_1.21

fresh, well-rested, and completely undistracted, focused. So, I believe that... That's actually, I think, the biggest challenge: actually, getting more mentally into the flow."

4.1.5 Practical Use-Cases

Question

Can you describe any specific projects or initiatives focused on the integration of GenAI in leadership roles within your organization?

Results

In the process of assessing the use-cases of GenAI that were mentioned by the interviewees, a range of practical applications emerged. These applications demonstrate the vast potential of this technology in improving the daily operations of leadership and management.

The application of GenAI in decision-making processes is highlighted by Int_01 (Ex_1.22). Specifically, they highlighted the significance of artificial intelligence in providing a thorough summary of organisational operations and dynamics, which is essential for making decisions based on accurate information. The responsibility of a middle manager, who frequently works with both strategic oversight and operational details, is a good fit for this application because it correlates well with that function.

In addition, Int_01 demonstrates how GenAI can help in maintaining consistency and versatility in communication (Ex_1.23). They foresee artificial intelligence as a tool that may be used to diversify and preserve the transmission of the organisations' goals and vision. When it comes to huge organisations, where consistent message is essential to clear direction and goal alignment, this perspective is especially relevant.

An interactive use of GenAI is what Int_02 envisions (Ex_1.24). It is discussed that an GenAI-driven conversation tool should be developed for use in situations such as potential applicants who are considering joining the organisation or employees who are having

delicate conversations with leaders. This use-case is illustrative of the potential that artificial intelligence has in the field of human resources and internal communication, particularly in interactions that are sensitive or critical.

Int_03 illustrates a number of real-world applications of GenAI (Ex_1.25). Research, fact checking, proof checking, and forecasting are some of the areas that they mention using it for. These applications are vital to the strategic planning and precision in high-level decision-making, which is corresponding with the obligations of a job at the C-level.

In addition to this, Int_03 emphasises the application of AI in the translation of languages (Ex_1.26). In the context of sensitive business contexts, they highlight the significance of implementing AI solutions that are both secure and suited to the specific needs of the organisation.

A novel application of GenAI in employee feedback is presented by Int_07 (Ex_1.27). They propose a tool that streamlines the process of providing feedback to supervisors and improves employee engagement analysis. The programme also generates reports for supervisors and conducts surveys.

As a final point of discussion, Int_09 describes how GenAI can be utilised in ordinary administrative chores (Ex_1.28). Applications such as creating newsletters, conducting research, communicating via email, and advertising job openings are mentioned from their perspective. In light of this, it is clear that GenAI has the ability to automate and optimise everyday operations, freeing up leaders to concentrate on more important issues.

Examples		
"One of the best use cases I see is for like decision making. So, making sure that I have insight of how the organization is working. What are the...what's happening? It's kind of like summarizing the information that I need then to decide on."	Int_01 Paragraph 24	Ex_1.22
"This is what we need to do. This is the vision that we have. Generative AI could help me, passing the message. Or at least keeping consistence on passing the message and or breaking down that message in different ways and so on."	Int_01 Paragraph 46	Ex_1.23

"And we are currently preparing this or testing this with an MVP on one, two moments is that you can have a conversation. We will train the AI that you can really have a conversation. One of the moments is, for example "I consider joining a company". So, a potential candidate that is thinking about to join this company. How would such a conversation go? Or "I'm having a sensitive conversation with my leader". So, it's really about maybe a more private topic that you share with your leader, that you have a real issue and that you need help in a certain regard."	Int_02 Paragraph 25	Ex_1.24
"We use generative AI for example, for forecasting, proof checking, fact checking, (…) and for research."	Int_03 Paragraph 45	Ex_1.25
"The language translation and so on and so forth. We have the in-house version of the OpenAI, which is kind of very solidly guarded."	Int_03 Paragraph 49	Ex_1.26
"And so, I have now created a kind of small survey tool that actually conducts the conversation with the employee and then directly creates a report for the supervisor."	Int_07 Paragraph 17	Ex_1.27
"But there are tasks like writing the monthly newsletter, sending out emails to the communities, a lot of research work. The job posting, like these LinkedIn posts."	Int_09 Paragraph 30	Ex_1.28

4.1.6 Most impacted Leadership Styles

Question

What aspects of your current leadership style do you think would be most affected by Generative AI?

Results

The analysis of the interviews revealed insights into the ways in which GenAI might influence various leadership styles. As already identified during the literature research, leadership styles are characterised by their dynamic nature and their ability to adjust to changing circumstances and technological breakthroughs. The interviewees have been asked to identify how different leadership styles might evolve through the introduction of GenAI into their daily work and have drawn a picture where leaders are now confronted with a landscape of ever-changing dynamics and new challenges.

Int_03, provided a perspective on the adaptation of Democratic and Autocratic leadership styles (Ex_1.29). In a democratic leadership setting, traditionally characterized by consensus and team input, GenAI introduces a shift towards leveraging AI for direct data insights. This evolution could lead to a more balanced approach in decision-making, where collective opinions and gut feeling are augmented by data-driven insights. In an autocratic framework, where decisions are typically unilateral, GenAI offers an opportunity to indirectly measure the opinions of stakeholders. This could make autocratic leadership more informed and perhaps more empathetically aligned, without compromising hierarchies. This perspective is especially important when organizations face concerns as mentioned by Int_04 (Ex_1.32). Power dynamics and loss of control in management might complicate the integration of GenAI into traditional structures. The uneasiness about delegating tasks to AI reflects a common resistance in the face of change, especially when it's perceived as a challenge to established hierarchies. This sentiment underscores the necessity for a nuanced approach to change management and a reassessment of leadership roles in an AI-enhanced environment.

Int_03 (Ex_1.30, Ex_1.31) emphasises the importance of human-centric attributes in leadership, and the other respondents continued to emphasise the significance of these qualities. In spite of the introduction of data-driven technologies such as GenAI, it is anticipated that the fundamental aspects of leadership, such as empathy and gut feeling, would continue to be significant "for years to come". In addition, this is evident in the findings made by Int_06, who makes a distinction between management and leadership in the era of artificial intelligence (Ex_1.33, Ex_1.34). The role that GenAI will play in the more abstract and inspiring aspects of leadership, such as motivating and empowering teams, is not yet fully understood, despite the fact that it is expected to optimise routine tasks. This distinction establishes a distinct boundary between the operational efficiency that GenAI has to offer and the qualities of leadership that are inherently human, such as the ability to inspire and envision. This notion aligns with the conclusion drawn from the literature research that certain aspect of Pendleton's Primary Colours of Leadership model (see Figure 4) are more impacted than others. As an additional point of interest, Int_06 predicts a change towards a leadership strategy that is more human-centric (Ex_1.35). As artificial intelligence takes over more process-oriented tasks, there is an opportunity for leaders to concentrate on the development of their teams and the building

of interpersonal relationships. There is a possibility that this realignment will represent a shift towards leadership styles that are emotionally intelligent, and people focused. This shift will emphasise that leadership will be the ability to develop one's own creative capacity as well as the creative capacity of others.

Both Int_06 and Int_09 suggest a transformation in leadership roles and responsibilities (Ex_1.36, Ex_1.37). The trend indicates a future where lower-level, task-focused leadership styles may be increasingly automated by AI, compelling leaders to focus more on strategic, creative, and transformative aspects of their roles. This evolution could redefine leadership in the age of AI, emphasizing vision, inspiration, and human connection.

Examples		
"A Democratic leader might choose the AI to have more straight data points that you can decide to take a decision on rather than relying on multiple people. Whereas autocratic leader might use generative AI to get a sense of where his people, his or her people or the people who are taking the decision are standing."	Int_03 Paragraph 11	Ex_1.29
"One of the most understated things in leadership or in business is simply it sounds very basic, but your gut feeling in management, especially one of the most, I would say for years to come."	Int_03 Paragraph 29	Ex_1.30
"Human emotions and empathy are a superpower"	Int_03 Paragraph 33	Ex_1.31
"And as a result, the existing world of managers would also be reluctant to hand over such issues because it is also a loss of power."	Int_04 Paragraph 29	Ex_1.32
"Distributing work, distributing projects, distributing tasks for people, figuring out workload, balancing off your employees, all those things. And that's management. And I think for that AI is awesome."	Int_06 Paragraph 8	Ex_1.33
"Enabling, motivating, really encouraging their own creative power, giving them motivation, and giving them tools to actually get those tasks done. And that's actually where my mind doesn't necessarily have a place yet."	Int_06 Paragraph 10	Ex_1.34
"And so that's really the key is to really think about how can just as for me, the chance of AI is to really say, how can we really focus on humans now? Because as far as I'm concerned, 80% or so of the processes that are going on	Int_06 Paragraph 19	Ex_1.35

in an organization can be replaced with technology. And so, this gives us then the chance to actually use our time to be human with each other."		
"I think in a way, like the lower-level leadership styles, they will be replaced by AI (…) AI can do that now too. And it's pushing leaders to be in the higher levels of leadership,"	Int_06 Paragraph 44	Ex_1.36
"My area of influence has even grown. (…) This means that exactly what my job is, namely, to deliver motivation and clarity to them, becomes even more important."	Int_09 Paragraph 28	Ex_1.37

5 Discussion

5.1 Implications and Recommendations

The present study sought to explore the impact of generative artificial intelligence on leadership in technology driven organizations. Whereas research is currently mainly focused on the operational implementation, this study provides insights in the human-centric and liberating capabilities of GenAI. The author could only identify one academic study that explores the views of business practitioners about the impacts of generative AI on skill sets (Cardon et al., 2023) and one that discusses the impact of AI as a whole on leaders and leadership (Peifer et al., 2022), yet solely based on literature research. This is particularly fascinating as recent literature paints a rather pressing image of the impact of digitalization, and thus also GenAI, on the role of modern leadership.

At least in the near future, leadership appears to be augmented rather than radical changed by the integration of GenAI. While GenAI might not drastically change leadership styles directly, there are many implications that can be made and certainly, the introduction of this technology in organizational contexts will influence all aspects of leadership. However, it is currently believed that the core essence of leadership - guiding, inspiring, and connecting with people - is anticipated to remain in the hands of humans, with GenAI serving as a tool to enhance these fundamental aspects, rather than a replacement.

Limitations

With that being said, in order to get a comprehensive understanding of the findings, the following limitation in sample selection and data analysis upfront need mentioning. First, the relatively recent emerge of GenAI technology in the business context is one of the most significant obstacles. Due to the fact that the majority of the leaders and experts had less than a year of experience with these technologies, the amount of empirical evidence and long-term insights that can be gained is limited. Second, the fact that the research investigated solely GenAI turned out to be an additional constraint. Despite the fact that this study offers insightful information on the impact of GenAI, it is essential to acknowledge the existence of a great number of different artificial intelligence technologies that are currently in a variety of degrees of development. These new technologies

have the potential to have an impact on leadership that is comparable to, or even larger than that of earlier technologies. The possibility of GenAI being combined with other AI systems is not taken into consideration in this study, but likely to happen in the near future. Third, unresolved to a considerable extent are the ethical implications of GenAI, namely the concept of responsible AI. This particular aspect is not thoroughly investigated in this study, and it was assumed that leaders will implement GenAI into their daily routines. Fourth, the study places a primary emphasis on the leadership perspective, presuming that the adoption of GenAI applications in leadership roles is carried out in a hierarchical fashion. This study does not investigate the viewpoints of the employees. As leaders transition from traditional leadership styles to more people-centred methods, it is anticipated that they will confront major hurdles in managing change and transforming the cultures of their organisations. Lastly, one final point to consider is that the presence of four employees from the same corporation, although from different organizations and countries within the company, may result in a certain degree of implicit bias. This group of workers could have similar perspectives and attitudes, which are formed by the broader culture of the company as well as the strategic goals that it strives to achieve. It is possible that this will have an effect on the findings of the study in a particular way.

Sub-Research Question 1: What is the current status of generative AI adoption in modern corporations, especially in leadership roles?

The current status of GenAI adoption in modern businesses, particularly in leadership roles, presents a diverse and evolving landscape. The findings from the interviews indicate that while there is growing interest and experimentation with GenAI in leadership, its integration and maturity levels vary significantly across different organizations.

One notable trend is the variance in GenAI adoption based on management levels. C-Level executives generally perceive a higher maturity level in their organizations' GenAI integration, likely due to their strategic oversight and involvement in broader organizational initiatives where the potential of GenAI is more apparent and prioritized. In contrast, Senior and Middle Managers report lower maturity levels, often facing practical challenges such as accessibility and quality of operational data especially in the field of engineering. Their experiences suggest that many organizations are still in a preparatory

phase, focusing on data preparation and digitalization as prerequisites for effective GenAI implementation. Geographical differences also emerge, with US managers reporting slightly higher maturity levels compared to their counterparts in Spain and the DACH region. However, within specific regions like Spain, the disparity in GenAI adoption between smaller, agile organizations and larger, established companies is evident. Smaller entities seem to adopt GenAI more rapidly, highlighting the impact of organizational size and structure on technological adoption. Industry-specific differences are also noticeable. The Technology and Business and Professional Services industries show higher maturity levels compared to the Mobility industry, where legal, governmental and compliance challenges significantly hinder GenAI integration.

Interestingly, despite the varying levels of GenAI integration, all leadership professionals interviewed have had some degree of experience with GenAI tools. This widespread exposure, even in the context of GenAI's relatively recent emergence, underscores the growing influence of this novel technology. However, it's observed that the current application of GenAI in many organizations is primarily focused on improving productive and administrative efficiencies rather than directly impacting leadership practices.

Leaders across the board acknowledge the responsibility of adopting GenAI as part of their leadership role. There is a recognition that directing the organization in the effective use of GenAI tools and fostering the necessary mindset is a critical aspect of modern leadership. Moreover, those who frequently utilize GenAI are beginning to recognize its potential benefits in leadership, exploring use-cases that could liberate them from traditional tasks and better prepare them for future challenges. Leaders are increasingly viewing GenAI as a strategic tool that necessitates a responsible and thoughtful approach to ensure its effective integration into organizational leadership practices.

Surrounding the discussions about the integration of GenAI in leadership roles, a significant and somewhat unexpected theme has emerged: the acceleration of trust within organizational dynamics. As leaders increasingly adopt GenAI tools into daily operations, they are observing a notable rise in the levels of trust towards their employees and within their teams. This shift goes beyond the widespread expectations associated with performance increase due to the usage of GenAI tools. The increased trust can be attributed

to several factors, such as transparency, visibility, empowerment, responsibility, and improved collaboration. The increasing trust levels observed with the use of GenAI suggest a significant evolution in leadership practices. Trust is a cornerstone of effective leadership and team management. It implies that GenAI is not only a driver of innovation and productivity but also a catalyst for fostering a more collaborative, empowered, and trustful workplace culture.

This unexpected benefit of GenAI in accelerating trust shows potential in impacting leadership paradigms. It highlights the need for leaders to approach GenAI not just as a technological enhancement but as a tool for cultivating deeper, more meaningful interpersonal relationships and a strong culture.

Sub-Research Question 2: What characteristics of leadership in modern businesses might be most influenced or augmented by the implementation of generative AI?

The incorporation of GenAI into leadership roles is met with cautious optimism from professionals with leadership positions. Among the many obstacles that must be overcome are the following: assuring the ethical use of artificial intelligence; ensuring readiness for the data economy; ensuring sustainability; managing change; and ensuring that there is a balance between technological efficiency and human judgement. This cautious attitude, which is particularly noticeable in larger organisations, demonstrates a deep knowledge of the issues that are confronting them. In spite of this, it is anticipated that the adoption of GenAI will have an effect on all three subdomains that are described in Pendleton's leadership model: the strategic, the operational, and the interpersonal, respectively. On the other hand, it is anticipated that the magnitude and timing of the influence that GenAI will have on various sectors will differ.

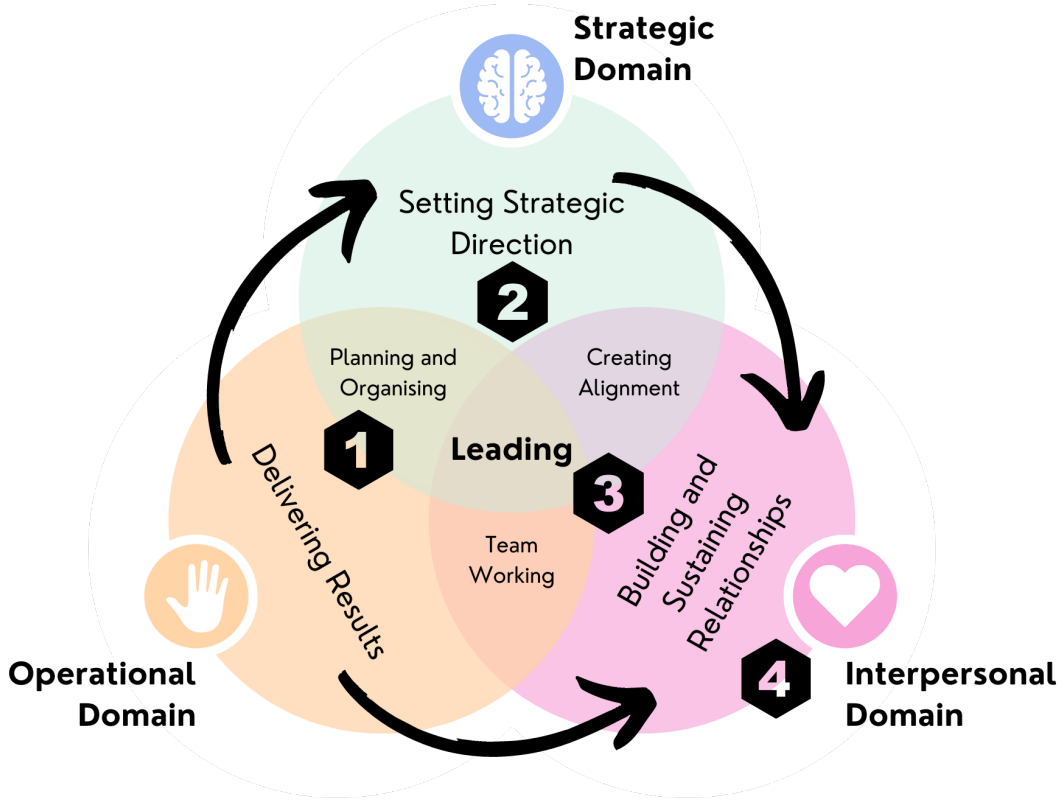

Figure 9: Pendleton's leadership model, influenced (own representation)

Figure 9 provides an overview of the four stages that the implementation of GenAI is anticipated to go through, as well as where they can be located in Pendleton's leadership model.

The operational domain is anticipated to be influenced first. Traditional processes will be automated, offering leaders unparalleled efficiency in 'Delivering Results' and 'Planning and Organizing' [1]. This efficiency is gained by GenAI's ability to process and analyse huge amounts of data, streamlining and automating various operational tasks. The leaders can thus delegate routine, data-intensive tasks to GenAI, allowing them to concentrate on more complex, strategic decisions. This shift not only enhances operational efficiency but also propels leaders towards more high-level, strategic functions.

The strategic domain of leadership, commonly associated with setting the direction and vision of an organization, is also thought to be impacted [2]. GenAI's advanced predictive capabilities and data-driven insights give leaders a deeper understanding of external

market dynamics, enabling them to make more informed, foresighted decisions. This aspect of GenAI ensures that leaders can navigate the complexities of today's fast-paced, ever-changing business environment with greater agility and vision. A critical aspect of this evolution is the balancing act between leveraging technology for efficiency and maintaining essential human insights and judgment. Leaders emphasise that while GenAI can provide data-driven insights and automate routine tasks, the irreplaceable human elements of empathy, ethical reasoning, and interpersonal skills remain central to effective leadership. This balance suggests that the interpersonal domain, which Pendleton describes as the 'heart' of an organization, will likely experience the GenAI impact subsequently, as the technology matures within organizations. The increased trust and efficiency gained from GenAI in operational and strategic domains can provide leaders with more time and resources to focus on 'Team Working' and 'Creating Alignment' [3]. Leaders can use GenAI to gain insights into employee motivations, preferences, and behaviours, enhancing their ability to build and sustain relationships. Additionally, GenAI tools can be used for practicing interpersonal conversations and conflict resolution, further strengthening team dynamics and alignment. However, perhaps the most profound impact of GenAI in this domain will be seen in the corporate culture [4]. In an era where retaining talent becomes increasingly challenging, creating an attractive working environment has to become a top priority. This environment necessitates leadership styles that are adaptive, supportive, and focused on individual development. GenAI's role in enhancing leadership styles such as situational leadership can be a game-changer here. By providing nuanced insights into employees' needs and development stages, GenAI enables leaders to tailor their approach, thereby fostering a more responsive, empathetic leadership style.

The interviews showed that the concept of situational leadership, which adapts to the evolving needs of team members and market situations, could become significantly more efficient with the integration of GenAI. The technology's capability to analyse and understand team dynamics and markets on a deeper level could empower leaders to provide more personalized guidance and support, enhancing both, the teams' as well as the organizations', performance, and drive. The data sources of such data can consist of self-

reported information from employees, such as regular questionnaires, as well as automatically gathered data from electronic channels, movement patterns, and physiological data supplied by wearables (Quaquebeke & Gerpott, 2023).

Moreover, GenAI is increasingly being seen as an enhancement to human-centred leadership. This perspective was shared by professionals focusing on executive and leadership education, who view GenAI as a helpful tool in augmenting leadership capabilities. In correspondence with this perspective, insights from one interview, echo a very similar sentiment to current literature that GenAI is poised to influence the very fabric of decision-making and leadership (Werner & Arlt-Palmer, 2019). They emphasised the potential for nurturing leadership qualities in individuals, regardless of their starting point. "The belief that anyone with decent qualities can be shaped into a leader resonates not just within our organizational ethos but also on a personal level for me.", interviewee Int_03 shared. At the current stage of adoption, GenAI is enabling leadership to be more adaptive, innovative, and ethically aware, rather than replacing human leaders. Leaders are finding that with GenAI, they can shift their focus from micromanaging tasks to adopting more strategic and visionary roles. Yet, the technological development is not slowing down, and several leaders expect flattened hierarchies in the future. Even though it seems to be far away, leaders should not be fooled. AI will have the capabilities to substitute human leadership completely (Quaquebeke & Gerpott, 2023).

One key takeaway of this study is that all leadership styles have their unique strengths and can contribute significantly to the effective integration of GenAI in various organizational contexts. The preliminary hypothesis that certain leadership styles, like autocratic, will become obsolete through the implementation of GenAI could not be proven.

However, early adopting experts and leaders agreed that some of the traditional styles might become less prevalent when integrating AI in their roles. This echoed in statements by leaders with higher maturity, who already practice more people centric styles (e.g. Servant, Transformational). Transformational leaders, known for their emphasis on vision, innovation, and driving change, are likely to find greater resonance in an environment of constant innovation and evolution. This dynamic environment also requires leaders to be more agile and responsive, so situational leadership based on the needs and challenges will be necessary. Servant leadership appears to gain more focus due to the

fact that leaders, being freed from workload, have more time to provide support and guidance, and prioritize employee empowerment and well-being. Similarly, democratic leaders, with their emphasis on collaboration and collective decision-making, might see an increased application of their style, as GenAI facilitates open and diversified decision. Charismatic leadership, while not mentioned by the interviewed professionals, might need to balance its natural influence with the collaborative and data-driven nature of GenAI. Using their charisma may work great to inspire AI adoption within the organization. Literature and experts alike argue that emerging trends favour innovation, adaptability, and intrinsic motivation over the means of performance-based rewards. Thus, transactional leadership is seen as less visible. On the other hand, autocratic leadership might see reduced effectiveness in collaboration and the creation of attractive workplaces. They may need to incorporate elements of flexibility and collaboration into their routines. Lastly, laissez-faire leadership, characterized by minimal guidance from leaders, might be less prominent as strategic direction and active engagement from leaders is crucial, especially in integrating and leveraging GenAI.

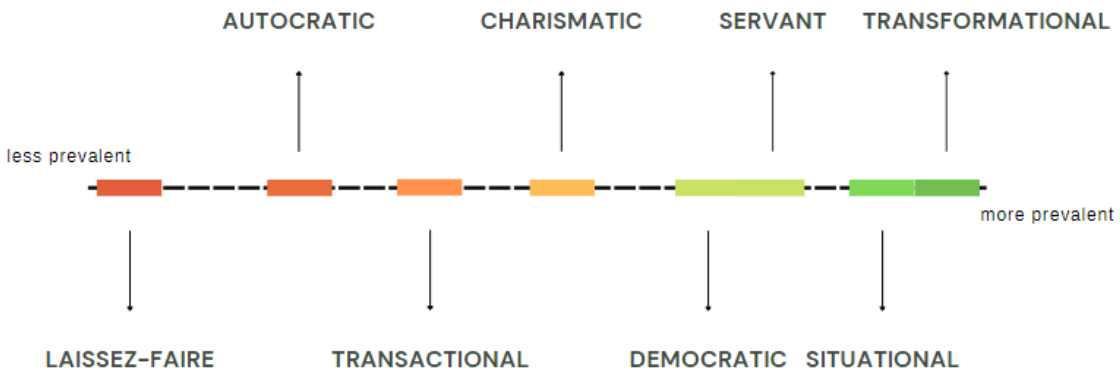

Figure 10: Prevalence of leadership styles (own representation)

In reality, however, leaders are facing a future landscape that will likely be characterized by a blend of these styles. As already mentioned in the literature study: There is no singular leadership style that can be universally applied to every individual and situation (Werner & Arlt-Palmer, 2019). Further, it's important to note that the effectiveness of any leadership style depends on the specific context of the organization, including its culture, industry, and the nature of its workforce.

This evolution of leadership also started a discussion about the rise of new leadership styles that seamlessly incorporate AI into their core. As we have seen, the future of leadership in the age of AI is characterized by a synergy of human insight and AI efficiency. Experts and leaders alike commented that the ability to integrate GenAI effectively into leadership practices, together with the ability to reflect their own leadership styles, will become a critical element of success and sustainability in the modern corporate world.

Main Research Question: How do specific generative capabilities of AI challenge current leadership styles within modern business environments?

Lately, the integration of GenAI has been heralded as an overall, all-changing transformative force. This study reveals a common sentiment among leaders: a desire to use GenAI to reduce workload and create more space for human-centric leadership practices. However, a critical examination suggests that the realization of these aspirations may not be as straightforward or directly attributable to GenAI as initially thought. Many leaders expressed a strong desire to use GenAI to lessen their managerial and administrative burdens, believing that this would enable them to focus more on interpersonal aspects of leadership, such as employee engagement and team dynamics. Professionals already see a broader trend in modern leadership that shifts towards more empathetic, supportive, and human-centric approaches. While GenAI undoubtedly presents opportunities to optimize efficiencies and reduce workloads to a certain degree, it's critical to recognize that the adoption of GenAI alone does not automatically translate to a change in leadership behaviour. Simply implementing GenAI tools into daily work life does not guarantee a shift towards more empathetic or engaged leadership. Instead, it requires a conscious effort from leaders to redirect the time and resources saved by GenAI towards more meaningful interactions with their teams. Moreover, a human-centric approach heavily depends on the overall organizational culture and individual mindset of each leader. In organizations where efficiency and task completion are the top priority, the introduction of GenAI might simply boost these values rather than shifting the focus towards employee well-being and empowerment.

In summary, while GenAI has potential to support the reshaping of leadership landscapes, its actual impact on leadership styles depends on more than just the technology

itself. For GenAI to truly contribute to a shift in leadership styles, it must be complemented with targeted leadership training and development initiatives, as well as organizational development.

Sub-Research Question 3: What practical strategies and recommendations can be derived for leaders to harness the potential of generative AI in their roles?

Upskilling and Leadership Excellence

Because of the rapid pace at which technological developments are being made in the field of GenAI, it is becoming increasingly difficult for leaders to keep themselves up to date with the most recent innovations and to incorporate them in an appropriate manner into their leadership tasks. It will be necessary for professionals to rapidly gain new abilities in order to adjust the methods in which they interact, cooperate, and generate output. The need for new skills is likely to be a challenge on multiple levels, including the individual, the organizational, and the social level (Cardon et al., 2023). Cardon et al furthermore suggest that business professional receive training on AI-mediated communication, including virtue ethics, deontological ethics, and consequentialist ethics. Taking this into consideration, it is strongly suggested that leaders obtain assistance that is both profound and well-tailored in order to successfully navigate the complexity of implementing GenAI. The interviews conducted during this study highlight a common sentiment among leaders - they often feel overwhelmed by the pace of change and lack the necessary resources to thoroughly explore and understand the full potential of GenAI. This sense of being overwhelmed with technological developments, without adequate support, can hinder the effective integration of these tools into leadership practices.

It is necessary to improve leadership training programs and guidance in order to address this issue. These should be tailored to precisely address the details of GenAI. Not only should these programs concentrate on the technical aspects of these tools, but they should also concentrate on how these tools might be strategically deployed within a variety of leadership scenarios. Specifically, this involves creating an awareness of the consequences that GenAI has on decision-making, the dynamics of teams, and the culture of organizations. In addition, these training programs ought to be constructed in such a way that they provide flexibility and adaptability, reflecting the ever-changing nature of

GenAI itself. In order to ensure that they continue to be at the forefront of this innovation and its applications in leadership, leaders require continuous support that grows along with the technology.

Additionally, organizations should think about developing specialized teams or functions that are focused on the research and integration of artificial intelligence in leadership roles. These teams should function as internal resources for executives, and other managers, supplying them with up-to-date information, practical applications, and strategic ideas on how to effectively upskill for the age of GenAI.

Leadership Proactivity

Despite the fact that leadership development is an essential component, research made it clear that leaders have the responsibility of engaging proactively with GenAI. They cannot passively wait for organisational training or external regulations to direct their behaviour; they must act themselves. The integration of GenAI into widely used office suites by companies like Microsoft and Google is not a distant future but a current reality and will become less noticeable. This makes it an invisible yet essential technology that is here to stay. Leaders must engage in self-reflection and critically evaluate their everyday tasks and responsibilities. To what extent does their work include management vs actual leadership? Through this process, individuals can identify opportunities that offer the most potential for value gain, as well as pinpoint jobs that they find energy draining or that require a significant amount of time and effort. Leaders must first have self-awareness, followed by a thorough knowledge of technology, in order to see how it might directly enhance their own life, as well as that of their team or consumers. They have no option but to immerse themselves in these technologies. They need to explore and understand how GenAI can enhance their business processes, team management, and strategic planning. This exploration should encompass both the opportunities presented by GenAI and the associated ethical, security, and compliance issues.

There is a high probability that workers across the organization will embrace these technologies and make use of their capabilities to enhance their productivity, creativity, and ability to solve problems. As a result, it is necessary for leaders to not only adopt GenAI

but also to set an example for others to follow. This includes embracing continuous learning, encouraging experimentation, and fostering a culture of innovation, modelling adaptability and transparency.

Adapting Leadership Styles

It is important that leaders understand how GenAI connects with and might influences various leadership styles as they move forward with the integration of GenAI into their organizations. This will not only serve to improve the efficiency of the application that GenAI provides, but it will also help that its integration will be both smooth and beneficial. Table 5 presents an analysis of how GenAI could potentially interact with the leadership styles mentioned in chapter 2.3. Decision-making processes, the dynamics of teams, and the planning of strategic moves are all approached differently by each style. GenAI has the potential to impact each of these distinct types with its own set of advantages and challenges.

Table 5: Leadership styles pre- and post-GenAI

Leadership style	Pre-GenAI	Post-GenAI
Transformational	Leaders inspire and motivate team members to exceed their roles by fostering a connection and selling a vision or idea.	GenAI could personalize motivational strategies for individual team members based on historical performance and psychological profiles, thus making transformational leadership even more effective.
Situational	Leadership styles are adapted based on the situation and the competency and maturity level of the employees.	GenAI can guide leaders on when to adapt their style for optimal outcomes, like suggesting a shift to coaching when team performance data indicates a struggle with new tasks.
Servant	Leaders serve their team members, helping them to excel and achieve their career and personal goals.	GenAI can enhance personalized support by analysing how team members engage with learning resources, identifying individual preferences and styles, and create personalized career development plans.
Democratic	Decisions are made collectively, often after gathering and evaluating team input.	GenAI could facilitate real-time polling or sentiment analysis during team meetings to gauge

		opinions, thereby enriching the democratic process. It could also analyse past team decisions to predict the most favourable outcomes.
Charismatic	Leaders use their personal charm and qualities to inspire and motivate their teams.	GenAI can analyse the psychological traits of team members to advise the leader on how to adapt their charismatic tactics to different individuals or situations.
Transactional	This style focuses on trade-off, where performance is rewarded or penalized.	GenAI could automate performance tracking and even recommend appropriate rewards or penalties based on comprehensive data analysis, making the process more efficient.
Autocratic	Decisions are made unilaterally with little to no input from team members.	GenAI could inform the leader with data-driven insights, but the final decision still rests with the leader. GenAI might soften the edges of autocratic leadership by providing analytics that make the decision-making process more transparent, even if team members do not have direct input.
Laissez-Faire	Leaders offer little guidance to the team, leaving them to make decisions.	GenAI could act as an advisory system for teams, filling the guidance void left by the leader. This allows team members to consult a knowledgeable system while still maintaining independence.

The interviewed leaders and most scholars agree that the objective of GenAI is not to replace human discernment or intuition. It is about enhancing it. Leaders are responsible for analysing how the capabilities of GenAI might complement their own personal style in order to make more informed decisions, promote creativity, and enhance communication across teams. Throughout this research, multiple methods to accomplish this have been mentioned.

Furthermore, it becomes essential for leaders to ensure that they possess a thorough understanding of the ethical implications and biases that can arise from the use of natural language processing. Ensuring that the use of GenAI aligns with the company's beliefs

and ethical standards is crucial, and hence, necessary precautions must be implemented.

5.2 Conclusion

The present study demonstrates that corporate leaders are rapidly embracing GenAI for their everyday professional activities, yet not necessarily in the context of leadership. Even though the majority of leaders is in the early adoption, they have primarily favourable opinions regarding the capacity of GenAI to operate with greater efficiency, effectiveness, and creativity. Leaders anticipate leadership styles do not drastically change, but the importance and priority of each style will shift. They foresee significant benefits in terms of workload reduction and decision-making support, but its impact on fundamental leadership behaviour is more complex. The shift towards closer employee relationships and changes in leadership style are likely influenced more by individual aspirations and the evolving demands of modern leadership, rather than directly by GenAI. The real challenge lies in how leaders adapt to and integrate GenAI within their existing leadership frameworks, balancing technological efficiency and the organizational culture with the irreplaceable human elements of empathy, ethical judgment, and emotional intelligence.

5.3 Recommendations for Future Research

Further research is required on several topics related to this study. First, other industries and business sectors should be researched. This study only sampled a small number of professionals. Second, the future of human collaboration in modern, AI lead organizations, as well as the new emerging leadership styles mentioned in this study might be of interest.

Furthermore, during the exploration of the topic, one perspective sparked, that is worth talking about:

"Will employees work as hard with an AI Leader as they would with a human leader? Usually, humans try to impress other people and work harder to impress them."

While it is reasonable to assume that employees may not work as hard with an AI leader as they would with a human leader due to the perceived lack of human connection, it is

important to recognize that employee motivation is not solely driven by external factors like rewards and punishments. Intrinsic motivation, stemming from a sense of purpose, autonomy, and mastery, can also play a significant role in driving employee engagement and performance. Therefore, creating a work environment that fosters intrinsic motivation, even in the context of an AI-led leadership structure, is essential for ensuring employee productivity and satisfaction. It is worth researching the following aspects:

- The impact of leadership style on employee motivation in AI-led workplaces: Investigate how different leadership approaches, such as servant leadership or transformational leadership, can influence employee motivation when interacting with AI leaders.
- The potential for AI leaders to personalize interactions and create tailored experiences: Explore how AI technologies can be employed to provide personalized feedback, coaching, and mentorship, tailored to individual employee needs, and fostering intrinsic motivation.

At times of concluding this thesis, the EU AI pact was not fully legitimated, but the regulatory framework proposal was agreed on December 9, 2023. This framework categorizes systems that interfere with employment and management of workers as a high-risk AI system which are subject to strict obligations. One mayor point that will impact the impact of GenAI on leadership is:

- Emotion recognition in the workplace and in educational institutions is now forbidden, as well as social evaluation based on social behaviour or personal characteristics, and AI systems that manipulate human behaviour.

Considering these new EU-laws, it seems highly unlikely that AI system will actually replace leadership in the near future, at least in the European Union. Further research should investigate if and how these regulations restrict leaders in implementing GenAI in their roles.

6 Appendix

6.1 Declaration of Conflicting Interests

The author declares no potential conflicts of interest with respect to the research, authorship, and/or publication of this study.

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7 Annex

ANNEX I: Interview Field Manual Samples

Sample 1

Introduction

First and foremost, I want to express my deepest gratitude for taking time out of your busy schedule to be a part of this interview. I really appreciate your willingness to share your expertise and perspective today.
So, maybe I introduce myself first, as we have never met before. I am Kevin, working for Siemens now for about 20 years and I currently study Digital Transformation at the university of applied sciences in Zurich.

Purpose of the Study

The purpose behind my research is rooted in a belief that's close to my heart - that digital transformation is about more than just technology – it's about people. And that belief directly fuels my thesis. My ultimate goal is to explore how or if GenAI is transforming traditional leadership paradigms and what leaders think about this shift.

Interview Format

Our conversation today will be fairly relaxed but centred around a series of questions I've prepared. While I have this structured outline, I'm open to exploring any relevant tangents that may arise. The more comprehensive our discussion, the richer the data.

Recording and Consent

I'd like to inform you that I'll be recording our interview to ensure that I capture all of your insights accurately. The recording will be deleted once transcribed, and you'll have the opportunity to review and approve any citations of your words before they become public. If you'd like certain parts to remain anonymous or off the record, please feel free to let me know at any point during our conversation or after.

Do you have any questions before we start?

Warm-Up Questions

1. Introduction of Participant: Could you kindly start by introducing yourself, your current role, and the industry you're involved in?

2. Initial Interest in AI: What first attracted your interest in Artificial Intelligence, particularly in Generative AI?

3. Duration in Leadership Role: How long have you been in a leadership position or in leadership development? Have you noticed any shifts in your leadership style over time?

4. Current Use of Technology: Could you give me a snapshot of how your organization is currently using AI technology?

5. Personal View on Leadership: How would you define 'good or effective leadership'? Do you follow any particular leadership models or theories, or do you define any models for the organization?

Key Questions

- On a scale of 1-5, how would you rate your organization's overall maturity in implementing generative AI in leadership roles?
- *[Introducing my research question]* Are you aware of the different theoretical leadership styles that are currently implemented in modern organizations.
  Autocratic, Democratic, Ethical, Agile, Transformational, Transactional, Laissez-Faire, Servant, Delegative, Situational, and Charismatic
- Considering the latest news about the Microsoft Copilot: How does this affect the leaders within the organization?
- With your commitment to sustainability and ethical practices, how do you foresee GenAI aligning with these core values at the strategic level?
- What role can a CEO of a company like yours play in the creation of an ethical framework for AI?
- In what ways has the emergence of GenAI made you rethink the adaptability of your leadership style?
- What personal changes have you had to make, or do you anticipate having to make, in your leadership to keep up with the pace of AI innovation?
- How has the emergence of GenAI technologies impacted your vision for your company's future and your role in steering the company?
- On a scale from 1 to 5, where 1 represents minimal or no impact and 5 signifies a complete transformation of leadership, how would you rate the impact of generative AI on leadership styles within the organization?

  - Can you elaborate on the reasons for your rating?
  - In what ways do you anticipate generative AI might challenge or enhance your current leadership practices?
  - How do you foresee leadership styles evolving in response to advances in generative AI technology?
  - Are there specific leadership tasks or functions you believe will be most affected by generative AI?
- When considering the trajectory of GenAI's development and its integration into various business processes, at what point do you believe will it begin to significantly impact leadership styles and decision-making? Would you say it's already influencing it, or do you foresee this change happening in the near future, perhaps in the next two to five years, or even beyond a decade from now?
- Have there already been any pilot projects or initiatives to explore the use of GenAI in leadership? If so, can you tell me more about them?
- As a CEO, how do you see your role in setting an example for how GenAI is adopted and utilized across the company?
- What challenges have you faced, or do you anticipate facing with your board regarding the adoption and integration of GenAI?
- Do you believe AI can make better (data-driven) decisions compared to human leaders? Why?
- How do you plan to influence your organization's culture to embrace the changes brought about by GenAI?
- In situations where GenAI provides one direction and your executive team provides another, how would you navigate this as the final decision-maker?
- Are there areas where you believe AI could offer more "empathetic" and "patient" guidance than a human leader? Why?
- How important is the "human touch" in leadership, and do you think AI can replicate it?
- Could you imagine introducing "digital leaders"? GenAI leaders that work and decide fully independently?
  - What would you teach them and how would they be governed?
    There have already been examples of companies that replaced their CEO by an AI and are now fully driven by it.

- Are there certain ethical decisions that you believe should only be made by human leaders? If yes, which ones?
- Do you consider the adoption and management of Generative AI to be a responsibility that falls under leadership, or do you think it should be handled by another department or function within the organization?
- Do you believe the leader in your organization are ready to adapt to the changes brought by Generative AI?

Appreciation, Next Steps and Farewell

Thank you so much for taking the time to share your valuable insights with me today. Your input is incredibly important for my research and will contribute significantly to the findings of my thesis.

Before we wrap up, I have a few final questions:

- Would you like to mention any additional aspects or information that you believe should be included in relation to the topic we discussed today?
- If there are any ambiguities or if I need further clarification on your answers, may I reach out to you after this interview?
- Do you know of any other experts or colleagues in your network who you think could provide valuable perspectives on this topic?
- Once my thesis is completed, would you like me to share the results with you?

Next Steps:

- You will receive a copy of the transcript for your review, along with any quotes I plan to use, prior to publication.
- Please remember you have the option to retract or anonymize any parts of your statement up until the thesis is finalized.

Farewell:

Again, thank you for your time and your invaluable contribution to this study. I am very grateful for your expertise and insights. Wishing you all the best in your future endeavours, and I hope we can stay in touch.

Do you have any questions before we conclude?

Sample 2

Key Questions

- Are you currently planning to integrate GenAI in your personal leadership positions or have you already implemented it?
- Can you describe any specific projects or initiatives focused on the integration of GenAI in leadership roles within your organization?
- Do you consider the adoption and management of Generative AI to be a responsibility that falls under leadership, or do you think it should be driven by another department or function within the organization?
    - If you see it as a leadership issue, how should leaders be prepared or trained to handle GenAI?
    - If you see it as an issue from another department or function, how should this department/function interact with leadership to implement GenAI effectively?
- Do you see AI as a threat or an enabler to your leadership role?
- On a scale from 1 to 5, where 1 represents 'not comfortable at all' and 5 represents 'extremely comfortable', how would you rate your comfort level with the idea of integrating Generative AI into your leadership tasks? Could you please elaborate on the factors that influenced your rating?
    - What specific leadership tasks do you believe would benefit from the use of GenAI, and why?
    - Are there any leadership tasks for which you would be hesitant or unwilling to use GenAI? Please explain your reasoning.
    - How do you think your comfort level with GenAI in leadership tasks might change over time?
    - What resources or support would increase your comfort level with using GenAI for leadership tasks?
- Do you believe AI can perform any of your current leadership tasks independently? If so, which ones?

- On a scale from 1 to 5, where 1 represents minimal or no impact and 5 signifies a complete transformation of your leadership approach, how would you rate the impact of generative AI on your leadership style?
    - Can you elaborate on the reasons for your rating?
    - Could you provide examples of how generative AI has influenced or might influence your decision-making processes?
    - In what ways do you anticipate generative AI might challenge or enhance your current leadership practices?
    - How do you foresee your leadership style evolving in response to advances in generative AI technology?
    - Are there specific leadership tasks or functions you believe will be most affected by generative AI?
- Do you believe that the ethical dimensions or timeless leadership skills are becoming more important in the age of generative AI? Which ones in particular? *Integrity, Trust, Honesty, Fairness, Accountability, Respect, Transparency, Compliance with Laws and Regulations, Social Responsibility.*[3]
- How do you think generative AI technologies impact the importance of those leadership skills?
- Do you believe that AI could ever replace human interaction in leadership, such as performance reviews or conflict resolution? If so, how?
- If Generative AI could handle human relations aspects effectively, would you see it as freeing you to focus on strategy and innovation?
- What elements of leadership do you believe are uniquely human and cannot be replicated by AI?

[3] Extracted from (Werner & Arlt-Palmer, 2019)

ANNEX II: Interview Catalogue

Research Question	Sub-sub-research question	#	Question	Rational
1	What is the current status of generative AI adoption in your organization, especially in leadership roles	1	On a scale of 1-10, how would you rate your organization's overall maturity in implementing generative AI in leadership roles?	This offers a quantifiable metric of how advanced an organization is in the adoption of generative AI for leadership functions.
		2	Can you describe any specific projects or initiatives focused on the integration of GenAI in leadership roles within your organization?	This question aims to identify tangible examples of how generative AI is being implemented in leadership roles.
		3	What are the main obstacles you've encountered in implementing generative AI in leadership roles?	Understanding the challenges faced by organizations can provide insights into common hurdles that may need to be overcome.
		4	Are there dedicated teams or individuals responsible for overseeing the implementation of generative AI in leadership roles?	This will help to gauge the level of organizational commitment to implementing GenAI in leadership.
		5	Have there been any pilot programs or case studies on the use of GenAI in leadership within your organization?	Pilot programs or case studies would indicate a higher level of maturity and willingness to experiment with GenAI in leadership.
		6	Are there any quantitative or qualitative KPIs used to measure the success of GenAI implementation in leadership?	KPIs can provide a more objective measure of how successful the implementation process has been.
		7	Can you share any lessons learned or insights gained from your experiences in adopting GenAI in leadership roles?	Lessons learned can be invaluable for understanding what works and what doesn't when it comes to integrating GenAI into leadership functions.
		8	How is the ROI (Return on Investment) of implementing GenAI in leadership roles currently measured in your organization?	ROI is crucial for justifying further investment and expansion of GenAI in leadership.
		9	Are there any partnerships with external vendors or consultants for implementing generative AI in leadership? Or are you building everything with internal resources?	External partnerships may indicate a higher level of commitment and resources allocated for GenAI implementation in leadership roles.
		10	What are the short-term and long-term goals for generative AI adoption in leadership roles within your organization?	Understanding both the short-term and long-term objectives can provide a clearer picture of the organization's overall strategy for GenAI adoption in leadership.
1	Is GenAI a leadership topic?	11	Do you consider the adoption and management of Generative AI to be a responsibility that falls under leadership, or do you think it should be handled by another department or function within the organization?	This question aims to directly gauge where the interviewee thinks the responsibility for GenAI lies within an organization.
		12	If you see it as a leadership issue, how should leaders be prepared or trained to handle GenAI?	Ascertains what steps should be taken if the leadership is expected to handle GenAI.
		13	If you see it as an issue from another department or function, how should this department/function interact with leadership to implement GenAI effectively?	Explores the channels of communication and collaboration if the onus is placed on R&D/IT.
		14	How do you envision cross-departmental collaboration for the effective deployment of GenAI?	Investigates how different departments can work together, regardless of where the primary responsibility lies.

		15	What challenges do you foresee in aligning the goals of the leadership and the organization when it comes to implementing GenAI?	Identifies potential roadblocks in coordinating between the two departments.
		16	Should there be a dedicated team or role focusing solely on the ethical implications of using GenAI, and where should this team be situated?	Considers the ethical dimensions and who should be responsible for them.
		17	Do you think a third party or external consultant should be involved in the deployment of GenAI, and if so, who should manage this relationship?	Discusses whether external expertise is needed and who should manage that.
2	Do leaders believe that GenAI will change the way they lead?	18	Do you believe Generative AI will change your leadership style? If so, how?	This direct question aims to understand if leaders foresee a transformation in their leadership style due to GenAI.
		19	What aspects of your current leadership style do you think would be most affected by Generative AI?	Focuses on identifying which elements of leadership could undergo the most change.
		20	Are there aspects of Generative AI that you think could enhance your current leadership style?	Examines if leaders see GenAI as a tool for improvement in their leadership.
		21	Do you think Generative AI could pose challenges to your existing leadership methods? What are those challenges?	Identifies potential obstacles in integrating GenAI into their current leadership approach.
		22	How prepared do you feel to adapt your leadership style to the potential changes brought by Generative AI?	Assesses the readiness of leaders to adapt to new technologies.
		23	Would you require training to integrate Generative AI into your leadership methods?	Determines if there is a knowledge or skills gap that needs to be addressed for effective implementation of GenAI.
		24	How do you think your team would react to changes in your leadership style due to Generative AI?	Explores the expected impact on team dynamics.
		25	Do you believe that Generative AI can replace certain leadership tasks? If so, which ones?	Investigates the potential for automation of leadership tasks.
		26	What risks do you associate with changing your leadership style due to Generative AI?	Probes into any perceived risks or downsides.
		27	How open are you to experimenting with new leadership methods influenced by Generative AI?	Measures the willingness of leaders to adopt new strategies or methods.
		28	On a scale from 1 to 5, where 1 represents minimal or no impact and 5 signifies a complete transformation of your leadership approach, how would you rate the impact of generative AI on your leadership style? - Can you elaborate on the reasons for your rating? - Could you provide examples of how generative AI has influenced or might influence your decision-making processes? - In what ways do you anticipate generative AI might challenge or enhance your current leadership practices? - How do you foresee your leadership style evolving in response to advances in generative AI technology?	Rationale: Understanding the reasoning behind the rating provides context and depth, revealing specific expectations or experiences that shape the leader's viewpoint. Rationale: Concrete examples give tangible evidence of GenAI's influence and help to understand its practical applications in leadership. Rationale: This question explores potential positive and negative outcomes, leading to a nuanced discussion about the complex interplay between GenAI and leadership dynamics.

			- Are there specific leadership tasks or functions you believe will be most affected by generative AI?	Rationale: Leaders' projections about their evolution can offer insights into the perceived trajectory of leadership transformation due to technological progress. Rationale: Pinpointing particular tasks or functions likely to be impacted allows for a focused conversation on where GenAI integration may be most imminent or effective.
		29	In what ways do you think GenAI could alter traditional leadership dynamics and relationships between leaders and their subordinates?	This probes into the possible effects of GenAI on the interpersonal aspects of leadership, including communication, trust-building, and team collaboration.
		30	When considering the trajectory of Generative AI's development and its integration into various business processes, at what point do you believe it will begin to significantly impact your leadership style and decision-making? Would you say it's already influencing your approach, or do you foresee this change happening in the near future, perhaps in the next two to five years, or even beyond a decade from now?	Assessment of Awareness and Perception: - To gauge the leader's awareness of generative AI's potential and current influence on leadership and decision-making. - To understand how proactive or reactive leaders are regarding technological advancements in AI. Timeline for Adoption and Impact: - To determine how leaders perceive the timeline for AI's integration into leadership roles—this can offer insights into the urgency and priority given to AI in their strategic planning. - To identify if there is a consensus among leaders about when generative AI will become a crucial part of leadership tasks or if opinions vary greatly, suggesting a lack of a clear industry standard or expectation. Readiness for Change: - To assess how prepared leaders feel they are for the integration of AI into their leadership style and whether they believe their current skill set will suffice or need adaptation. - To explore their openness to change and willingness to evolve their leadership approach in response to emerging AI technologies.
2	Do leaders already know that GenAI will primarily affect white-collar jobs?	31	Are you aware that Generative AI is more likely to impact white-collar jobs than blue-collar jobs?	This is a direct question to gauge basic awareness about the impact sphere of GenAI.
		32	How do you foresee Generative AI affecting white-collar roles within your organization?	Aims to understand how leaders project the influence of GenAI on different job categories in their organizations.
		33	Do you believe white-collar roles in your organization are ready to adapt to the changes brought by Generative AI?	Measures the perceived readiness level of white-collar workers to embrace changes.
		34	Are there any strategies in place to upskill white-collar employees to work alongside Generative AI?	Queries the preparedness at an organizational level for the new tech environment.

		35	Do you anticipate resistance from white-collar employees towards the adoption of Generative AI?	Helps to understand the potential challenges in adopting GenAI within the organization.
		36	Do you think the impact of Generative AI on white-collar roles will be different from its impact on leadership roles?	Explores the perceived differential impact of GenAI on various tiers within the white-collar category
		37	How will Generative AI affect hiring strategies for white-collar roles?	Checks for any foreseeable changes in hiring due to the tech changes.
		38	What would be your message to white-collar employees in your organization about the advent of Generative AI?	Gauges the communication strategy leaders might adopt to handle the changes.
		39	Do you think Generative AI could potentially eliminate some white-collar roles in your organization? If so, which ones?	Directly queries the risk factor associated with GenAI adoption.
		40	What support systems are you considering to help white-collar employees adapt to Generative AI?	Looks at the proactive measures leaders might be considering to ease the transition.
2	What tasks do leaders believe can be taken over by AI?	41	Do you believe AI can take over any of your current tasks? If so, which ones?	This is a straightforward question that aims to gauge the perception of leaders about the extent to which AI can perform tasks currently executed by them.
		42	On a scale from 1 to 5, where 1 represents 'not comfortable at all' and 5 represents 'extremely comfortable', how would you rate your comfort level with the idea of integrating Generative AI into your leadership tasks? Could you please elaborate on the factors that influenced your rating? - What specific leadership tasks do you believe would benefit from the use of GenAI, and why? - Are there any leadership tasks for which you would be hesitant or unwilling to use GenAI? Please explain your reasoning. - How do you think your comfort level with GenAI in leadership tasks might change over time? - What resources or support would increase your comfort level with using GenAI for leadership tasks?	Measuring Comfort Level: Understanding how comfortable leaders are with the idea of integrating GenAI into their tasks provides insight into the current acceptance levels of such technologies in leadership practices. This metric can indicate readiness for adoption and potential resistance areas. Factors Influencing Comfort: By asking leaders to elaborate on what factors influence their comfort level, you gain insights into the perceived risks, benefits, and misconceptions about GenAI. This can reveal areas where further education or development is needed. Task-Specific Insights: Discussing specific leadership tasks that could benefit from GenAI, as well as those that may not, helps identify where GenAI is likely to be integrated first and where human leadership is considered irreplaceable. This can guide priorities in AI development and integration strategies. Hesitations and Concerns: Leaders' reluctance to use GenAI in certain areas can highlight ethical, practical, or reliability concerns that may need to be addressed to facilitate wider adoption. Temporal Dynamics: Understanding how leaders' comfort levels might change over time allows for anticipation of future trends in AI adoption and the evolving nature of leadership roles.

				Resource and Support Needs: Identifying what support or resources could increase leaders' comfort levels can inform the development of training programs, informational campaigns, and the creation of supportive tools that ease the transition to AI-augmented leadership.
		43	Do you see AI as a threat or an enabler to your leadership role?	This will help understand if the leader views AI positively or negatively in the context of their job.
		44	What tasks do you think should never be taken over by AI in leadership?	To understand what aspects of leadership are perceived as irreplaceable by AI.
		45	Do you think AI can better perform some tasks that you currently handle?	Gauges the perceived efficiency of AI in executing tasks compared to human capability.
		46	Are there tasks that you would willingly delegate to an AI?	To understand what areas of their job leaders are willing to automate.
		47	Do you believe AI can make better data-driven decisions compared to human intuition?	Investigates the trust that leaders place on AI's decision-making capabilities.
		48	How will AI taking over some tasks change your leadership style?	Looks at the potential transformation of leadership style due to AI integration.
		49	Do you think that AI can handle crisis management tasks effectively	Examines the leaders' views on AI's capacity to handle high-pressure situations that usually require human intuition and experience.
		50	Do you believe that AI could ever replace human interaction in leadership, such as performance reviews or conflict resolution?	Do you believe that AI could ever replace human interaction in leadership, such as performance reviews or conflict resolution?
		51	How would you feel about employees preferring AI-led performance reviews over human-led ones?	To gauge the leader's perspective on employee preferences shifting towards AI for performance reviews.
		52	Are there areas where you believe AI could offer more "empathetic" and "patient" guidance than a human leader?	This aims to understand whether leaders believe AI can actually exceed human abilities in some aspects of emotional intelligence.
		53	Do you think AI could help in reducing biases in performance appraisals or promotions?	To understand if leaders see AI as a tool for promoting equity and fairness within the organization.
		54	Would you be open to using AI tools for internal communication and team engagement?	This aims to measure the willingness of leaders to integrate AI into team communication and engagement practices.
		55	How do you think your team would react if an AI tool was introduced for performance assessments?	How do you think your team would react if an AI tool was introduced for performance assessments?
		56	What is your stance on the ethical implications of AI managing human relations aspects of leadership?	To explore any ethical reservations leaders may have about the use of AI in managing human relations.
		57	Do you see a potential for AI to assist in employee training and development plans?	This question gauges whether leaders think AI can be beneficial in the training and development of employees.
		58	How important is the "human touch" in leadership, and do you think AI can replicate it?	This question seeks to understand how irreplaceable human interaction is in leadership roles according to the leader.
		59	If AI could handle human relations aspects effectively, would you see it as freeing you to focus on strategy and innovation?	This question aims to find out if leaders would appreciate the chance to focus more on high-level tasks if AI could handle the human relations aspect of their role.

2	What remains irreplaceable in leadership?	60	What elements of leadership do you believe are uniquely human and cannot be replicated by AI?	This question is a direct approach to understanding what a leader considers to be the irreplaceable aspects of their role.
		61	Do you think emotional intelligence can be effectively replicated by AI? Why or why not?	Do you think emotional intelligence can be effectively replicated by AI? Why or why not?
		62	Are there certain ethical decisions that you believe should only be made by human leaders?	This question aims to understand the ethical boundaries that leaders set for AI in decision-making.
		63	What kind of leadership tasks do you believe require a level of creativity that AI cannot provide?	What kind of leadership tasks do you believe require a level of creativity that AI cannot provide?
		64	Do you believe AI could ever be as adaptable as a human leader in times of crisis?	Adaptability in unexpected situations is a key part of leadership; this question explores whether leaders believe AI could ever fill that role.
		65	Are there aspects of company culture that you believe can only be shaped and maintained by human leaders?	Company culture is often seen as a reflection of its leadership. This question investigates whether leaders believe this is an area that can be managed by AI.
		66	What elements of leadership do you believe require an understanding of social and cultural nuances that AI cannot replicate?	This question aims to explore whether leaders feel that the human understanding of social and cultural context is irreplaceable in their role.
		67	Do you think AI can fully understand and replicate the nuances of human motivation?	Understanding what motivates employees is crucial for effective leadership. This question investigates whether leaders feel this is something that could ever be replicated by AI.
		68	Can trust and rapport/close relationship between leaders and team members be built by AI?	Trust and rapport are often cited as foundational elements of effective leadership. This question explores whether leaders believe AI could ever take on this role.
		69	Do you think AI could ever replace the role of mentors or coaches in leadership?	Mentorship is a key part of leadership development. This question aims to find out if leaders believe AI could ever effectively replace human mentors.

ANNEX III: Used Software

ID	Name	Description	Purpose	Link
Tool_01	Microsoft Office	Documentation and Data Storage	Microsoft Office Suite was the primary tool for creating and formatting the thesis document, as well as for storing and organizing all research-related files and documents.	https://www.office.com/
Tool_02	Microsoft Teams	Conducting and Recording Interviews	Microsoft Teams was utilized for conducting and recording the qualitative interviews.	https://teams.microsoft.com/
Tool_03	Zotero	Literature research bibliography	Zotero was utilized collect, organize, annotate, and cite the literature used for the research.	https://www.zotero.org
Tool_04	F4x Transcript	Automated Transcription	Transcript software was used for the AI-based, and GDPR conform automated transcription of the recorded interviews.	https://f4x.audiotranskription.de/
Tool_05	F4analyse	Transcript Analysis and Correction	F4analyse was utilized for analysing (organization and coding) and correcting the transcriptions.	https://www.audiotranskription.de/f4analyse/
Tool_06	Canva	Creation of Visuals and Graphical Content	Canva was used for designing visuals and graphical content for the thesis, including charts, infographics, and other illustrative materials.	https://www.canva.com/
Tool_07	ChatGPT	Brainstorming, Structural Outline, Synonyms and Translation	ChatGPT-4 was instrumental in various stages of the thesis development, including initial brainstorming of ideas for my thesis, creating an initial structural outline, discussing synonyms, and translating text.	https://chat.openai.com/