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AI Adoption and Related Ethical Concerns:
Study of German SMEs

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ABSTRACT

This study examines the adoption of AI in German SMEs, with a particular focus on ethical concerns and related guidelines. The findings demonstrate that tools like ChatGPT have significantly increased AI usage in SMEs, albeit most enterprises are still in the early stages of AI adoption. Ethical concerns associated with AI are recognized by SMEs. Despite the absence of all-encompassing ethical frameworks, some guidelines do exist. This study advocates for a culture that prioritizes employee training and adaptability to keep pace with AI advancements and its growing usage, emphasizing the critical role of ethical considerations in this context.

KEYWORDS

Artificial Intelligence, AI Adoption, AI Ethics, Semi-structured Interviews, SMEs

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TABLE OF CONTENTS

1.	INTRODUCTION	3
2.	LITERATURE REVIEW	5
2.1.	ARTIFICIAL INTELLIGENCE AND ETHICS	5
2.2	GERMAN SMALL AND MEDIUM-SIZED ENTERPRISES	7
3.	METHODOLOGY	8
4.	FINDINGS.....	10
4.1	CURRENT STATUS OF AI ADOPTION IN GERMAN SMEs	10
4.2	ETHICAL CONCERNS IN AI INTEGRATION	12
4.3	ETHICAL FRAMEWORK AND GUIDELINES	15
5.	DISCUSSION.....	18
6.	CONCLUSION.....	24
	REFERENCES.....	26
	APPENDICES.....	33

1. INTRODUCTION

In the current discourse, artificial intelligence (AI) is a widely used term, representing groundbreaking technological progress. An empirical study conducted across various regions, including the United States, Germany, Japan, China, and South Korea, indicates an unanimous consensus that places AI at the forefront of technologies in terms of strategic importance (World Economic Forum 2023). The AI market size worldwide was valued at around \$100 billion in 2021 and is projected to grow to nearly \$2 trillion by 2030 (Next Move Strategy Consulting 2023). This significant growth indicates a rapidly expanding industry and emphasizes the importance of AI.

The increasing dialog surrounding AI requires a simultaneous assessment of ethical dimensions due to its dual nature: While it creates significant prospects for efficiency and other related benefits, it also raises ethical concerns that require careful analysis. For instance, Marc Rotenberg, executive director of the Center for AI and Digital Policy, expressed ethical concerns in regard to AI: *“We have automated decisions today (...) that make decisions about people’s opportunities (...) by automated systems that increasingly rely on statistical techniques [which] make decisions about people that are oftentimes opaque and can’t be proven”* (Democracy Now! 2023). This example raises the question of how to ethically manage AI.

According to the “Hightech-Strategie 2025”, Germany aims to become a global leader in AI research and application, unlocking its broad potential across many fields (Federal Ministry of Education and Research 2018). Germany, as member state of the European Union (EU), needs to strategically evaluate how to maximize the benefits and address the challenges presented by this transformation (van Roy et al. 2021). Given that small and medium-sized enterprises (SMEs) are pivotal to Germany's economy, their adoption of AI is essential. It is vital to comprehensively understand the unique challenges that German SMEs encounter in an ethical AI adoption.

Despite the significant potential within AI in German SMEs and the associated indispensable topic of ethics, there are limited empirical studies. Some existing research explores the ethical management of AI in general (T. Kim et al. 2023; Anshari et al. 2023; Haenlein, Huang, and Kaplan 2022; Brendel et al. 2021; Du and Xie 2021). However, most research is based on data from larger enterprises, that often overlooks the specific implications for SMEs. Other studies that focus on SMEs and their AI adoption do not sufficiently consider the ethical aspect that AI brings to SMEs (Bettoni et al. 2021).

This study aims to investigate the adoption of AI and its ethical implications in German SMEs to address that research gap. To achieve this, the following research question is posed: *How do German SMEs deal with the adoption of AI giving its ethical considerations?* This research question is accompanied by the following research objectives: (1) To examine the current state of AI adoption within German SMEs and to identify the types of AI technologies being integrated into SME operations, (2) to investigate the ethical concerns associated with AI adoption in SMEs and to understand the awareness level of these issues, (3) to determine the ethical guidelines established by German SMEs for AI adoption.

The research question will be answered by conducting twenty semi-structured interviews. The aim is to provide an overview of the current landscape of AI adoption within SMEs, with a focus on the awareness and preparedness of ethical concerns associated with this transformative technology. These findings can help SMEs integrate AI in an ethical manner amidst the dynamic business environment. The structure of the paper is organized as follows: After this introduction, the literature review deals firstly with AI and ethics, and secondly with German SMEs. The chapter is followed by the methodology used to understand German SMEs and their AI adoption, giving its ethical considerations. Then, the findings from a sample of SMEs will be outlined. Finally, the discussion chapter will draw the main implications of the findings, including managerial implications, limitations, and outlook for future research, before

concluding this paper.

2. LITERATURE REVIEW

2.1. ARTIFICIAL INTELLIGENCE AND ETHICS

Artificial Intelligence

Artificial intelligence, a concept developed several decades ago, has gained substantial attention and is now widely integrated into the operational processes of businesses and society (Karjian 2023). Alan Turing's significant work established the fundamental principles of the field of AI, albeit the term "artificial intelligence" was introduced at a later stage (Karjian 2023). AI is now essential in a wide range of industries – From medicine to manufacture to marketing (Hamet and Tremblay 2017; Zeba et al. 2021; Verma et al. 2021).

There is no universally accepted definition of AI; hence, many versions of the term exist. Copeland (2023) defines AI as "*the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings.*". Another definition is the following: "*Artificial Intelligence (AI) makes it possible for machines to learn from experience, adjust to new inputs and perform human-like tasks.*" (SAS n.d.). A third definition of this term is that AI "*is used to classify machines that mimic human intelligence and human cognitive functions like problem-solving and learning.*" (IBM 2023). Based on these definitions, AI refers in this study to the capability of computers to perform tasks characteristic of human intelligence, including learning from experience, adapting to new situations, and solving problems.

There are essentially three types of AI, namely artificial narrow intelligence (ANI), artificial general intelligence (AGI), and artificial super-intelligence (ASI), with only ANI existing today and also referred to as weak AI (SAP n.d.). There are several AI technologies, but the most widely used and rapidly-advancing technologies are the following: (1) Machine learning (ML),

(2) Natural learning processing (NLP), (3) Computer vision, and (4) Robotics (SAP n.d.).

In the context of this paper, NLP represents the most important technology due to the experiences of the interviewees, and *“involves analyzing how computers can process and parse language similarly to the way humans do”* (Copeland 2023). The well-known model ChatGPT is a practical application for NLP, but it is also used to generate images based on textual prompts in tools like DALL-E and Midjourney (Copeland 2023). ChatGPT is a chatbot developed by OpenAI and launched in November 2022, that interacts in a conversational way (OpenAI 2022). ChatGPT utilizes generative AI which integrates ML models to produce novel content such as text, audio, and software code, relying on comprehensive datasets (Budhwar et al. 2023). Thereby, generative AI employs deep learning models to produce content that resembles human language (Lim et al. 2023).

AI Ethics

Before discussing ethics in AI specifically, let the term ethics be defined in general terms: *“ethical behavior is that which is morally accepted as “good” and “right” as opposed to “bad” or “wrong” in a particular setting.”* (Sims 1992). Sims (1992) showed that it is essential for organizations to behave ethically. Therefore, employees need to be equipped to manage ethical issues in their daily work. The topic of ethics is particularly important in AI. AI ethics deals with guidelines that guarantee the responsible development and utilization of AI technologies (Lawton and Wigmore 2023). Michael Sandel, political philosopher, stated in this context: *“we are discovering that many of the algorithms (...) replicate and embed the biases that already exist in our society.”* (Pazzanese 2020). Using AI effectively requires strict adherence to ethical standards, which are critical not only for responsible behavior, but also for maximizing the business benefits of AI. Shortcomings in ethical standards can have a broad spectrum of negative effects on business, like legal battles, and reputational harm (Talagala 2022).

There are numerous ethical challenges associated with AI, including bias, decision making, cybersecurity, and unemployment (Du and Xie 2021). The use of AI in decision-making processes may exacerbate today's problems with discrimination (Anshari et al. 2023). To prevent the misuse of AI technology, a strong focus on compliance with ethical standards is therefore necessary (Baker-Brunnbauer 2021). Nowadays, ethical concerns arise from human interaction, which will become even more complex as future AI systems gain the ability to determine their own moral status (Baker-Brunnbauer 2021). Ethical guidelines will thus become increasingly important when dealing with AI in the future.

2.2 GERMAN SMALL AND MEDIUM-SIZED ENTERPRISES

Companies vary in size, including the category of SMEs. But what constitutes SMEs? This paper uses the definition by the European Commission, which combines the number of employees and turnover to categorize businesses. Accordingly, everything less than 250 people and an annual turnover of not more than €50 million is part of this definition of SMEs (European Commission n.d.b). SMEs have several distinctive characteristics that set them apart from other businesses. One defining characteristic of SMEs is their limited resources, which also distinguishes them from larger companies (Tödting and Kaufmann 2001). Within the context of SMEs, they can be grouped into three categories, namely micro, small, and medium-sized companies (Definitions can be found in appendix 1).

SMEs play a crucial role in the economy. Worldwide, 90% of businesses are SMEs, which account for more than 50% of employment (Worldbank n.d.). In Europe, this number is even higher. SMEs represent 99% of all businesses in the EU (European Commission n.d.a). 99.6% of German firms belong to the definition of SMEs (Federal Ministry for Economic Affairs and Climate Action n.d.). Based on these numbers, it can be stated that SMEs are recognized as important contributors to economic growth and employment.

3. METHODOLOGY

This chapter outlines the methodology used to investigate the research objectives of the study. It will cover the research approach, interview process and data collection, as well as considerations for data reliability.

Research approach

The aim of this study is to provide a comprehensive analysis of ethical AI adoption among German SMEs. In line with the objectives, an exploratory research approach is adopted to gather new perspectives (Robson 2002). AI being in its early stages, the current literature lacks expedient insights on the topic (Di Vaio et al. 2020). Moreover, the rapid evolution of AI often leaves studies outdated. Thus, this research seeks to enrich the existing literature by exploring valuable insights. There are various methods for collecting qualitative data, but the predominant technique is the semi-structured in-depth interview (Dicicco-Bloom and Crabtree 2006). Semi-structured interviews were chosen for their flexibility in allowing predetermined questions to guide the discussion while also allowing for unexpected insights from the interviewee (M. Saunders, Lewis, and Thornhill 2009).

Interview process and data collection

The interview process comprised four steps: (1) Designing the interview guide, (2) Selecting suitable interviewees, (3) Testing the interview guide, (4) Conducting the interviews via online video calls. Overall, two hundred potential interviewees were contacted, of which twenty ultimately participated in the interviews. This sample of twenty interviewees participated in online semi-structured interviews during a one-month period in October/November 2023, each lasting between 25 and 50 minutes. The average length of the interviews was 33 minutes. The

interviews were recorded on video with permission and transcribed verbatim to accurately represent the verbal data. The interview guide with the interview questions, organized into three sections and matching the research objectives, can be found in Appendix 6.

To ensure the suitability of the selected interviewees, several conditions were established beforehand, including their role within the company, their affiliation with SMEs in Germany, and their previous experience with AI adoption in their respective organizations. Each participant was guaranteed confidentiality, and pseudonyms were used to replace actual names in the findings section (Coffelt 2017). Every time a participant's name appears in a quote within the findings section, it will be replaced by numbers assigned to them (Appendix 5). Interviewees voluntarily took part in the study without any incentives and received information about the study's purpose and their rights.

Data reliability

When conducting qualitative research, data reliability plays a critical role. The reliability of data is contingent upon the degree to which data collection methods and analytical approaches produce consistent and uniform results (M. Saunders, Lewis, and Thornhill 2009). It involves ensuring consistent results across various occasions and observers, as well as transparent interpretation of raw data (Easterby-Smith, Thorpe, and P. and Lowe 2008). Acknowledging the exploratory nature of this research, it is accepted that other researchers may not be able to replicate the results with accuracy. This is a key aspect of qualitative research, focused on in-depth exploration of a specific topic at a particular point in time. Efforts were made to enhance data reliability through the development of a semi-structured interview guide (Kallio et al. 2016) (Appendix 6).

4. FINDINGS

This chapter will present the findings that have emerged from the methodological approach. In total, twenty interviews were conducted with representatives of German SMEs from different industries. It is important to recognize that these are the individuals' perceptions in their companies and cannot automatically be generalized to their respective industry or even to all SMEs.

The interviews conducted include participants from a wide range of industries, most of them operating in Business Consulting and Services (55%), Industrials (15%), and Information Technology (15%) (Appendix 2). The largest groups of participants were CEOs (45%), Managers (20%), and Consultants (20%) (Appendix 3). More than half of all interviewees worked for small enterprises (55%), followed by 25% working for medium-sized, and 20% for micro-enterprises (Appendix 4).

4.1 CURRENT STATUS OF AI ADOPTION IN GERMAN SMEs

This section presents interview insights on the current state of AI adoption in the participants' companies. The level of AI adoption may differ, but the trend indicates a growing reliance on AI. Some companies are in the early stages (I1, I5, I10), while AI is already widely adopted in other SMEs (I2, I3, I13). However, they all agree on the importance and advantages of using AI. Interviewee 9 mentioned, *“Within the company, it is very important to us that our colleagues proactively deal with this topic of AI”*. Another interviewee stated, *“we didn't want technological developments to pass us by”* (I14). Therefore, there is also a perceived pressure to adopt AI, which may stem from a fear of missing out. However, AI offers numerous benefits in business processes, including time savings, increased efficiency, streamlined workflows, and improved creativity (I4, I5, I9, I11, I15).

AI has a broad range of applications. For instance, some companies have implemented an AI chatbot in HR to compose job advertisements and descriptions (I1, I7, I19). Another organization reports implementing AI technology for customer service, specifically in email analysis and text processing (I2). This approach suggests a rising trend towards customization through AI solutions. AI is also utilized in further areas, including production, marketing, and accounting, as evidenced by the interviews, where AI tools are rapidly becoming essential components (I3, I6, I8). Its versatility is seen in content segmentation, language adaptation, programming, text editing, summarization, and idea generation, highlighting the technology's innovative and time-saving capabilities (I3, I4, I5, I6, I15, I17, I20). Notably, the integration of AI in software development includes tasks like debugging, code development, and translation services, further emphasizing the potential to improve efficiency across software projects (I5, I11).

Now that the scope of AI integration in SMEs has been demonstrated, the following paragraph describes the distinct types of AI technologies used in the SMEs interviewed. As explained in Chapter 2.1, there are several types of AI technologies. The companies under examination particularly concentrated on NLP, which involves chatbots like ChatGPT. The primary benefit of utilizing these programs is the significant amount of time saved, as previously explained. Various enterprises employ ChatGPT for tasks such as text summarization, job ad creation, and content improvement (I3, I7, I10).

The integration of ChatGPT API for direct data input and enhancement manifests the expanding level of expertise in AI usage (I3, I14). The utilization of large language models (LLM) like ChatGPT in multiple settings, encompassing reporting and automated process support, evidences an acknowledgement of the productivity and innovation AI can offer. Furthermore, AI has gained significant traction in image generation and data analysis. Tools such as Midjourney and DALL-E are used for producing AI-generated images, while others make use

of AI for gathering and analyzing machine data, with the goal of identifying patterns and enhancing processes such as order timing for ecological effectiveness (I9, I11, I12, I13).

Particularly noteworthy is the result that SMEs are turning to external providers for AI solutions because of resource limitations, which highlights the difficulty in building in-house AI capabilities (I12, I14). The focused utilization of AI tools for designated tasks, including generating ideas, emphasizes a strategic approach to integrating AI, centering on saving time and enhancing efficiency.

4.2 ETHICAL CONCERNS IN AI INTEGRATION

The interviews collectively reveal a significant awareness of AI's ethical dimensions among interviewees. The extent to which ethical issues are linked with the adoption of AI in their own companies varied among the participating SMEs. While some enterprises do not perceive any ethical issues in their interactions with AI, most participants acknowledge this responsibility and behave accordingly. These discrepancies arise from variances in the application areas of AI on one hand, and levels of AI adoption on the other. The awareness of main ethical concerns encompasses data privacy, bias, transparency, and the impact on workforce. While this chapter addresses these concerns in greater detail below, chapter 4.3 presents what guidelines or framework conditions apply.

Data privacy

Data privacy is a big concern when it comes to AI adoption in SMEs. Several interviewees emphasized the importance of protecting sensitive information. For example, Interviewee 7 stated, *"Data protection is a major challenge. We are also very careful not to integrate any customer names or candidate names into the AI, because the AI then remembers everything*

somewhere.". This concern is shared by others who also stress the importance of this topic (I4, I8, I15, I16). A separate participant highlighted, *"With regard to data protection, we naturally do not upload any customer data to AI tools and of course comply with data protection requirements."* (I9).

Furthermore, the ethical dilemma associated with the usage of customer data in AI applications must be considered. The question that arises is what data can be ethically uploaded and used in AI systems while still aiming to maximize sales (I18). Interviewee 3 acknowledges both the potential advantages and risks: *"With regard to the use of customer data in an AI, I think it is also in the interests of all customers if we manage to use data (...) to make the platforms, products and processes more efficient."* Simultaneously, he emphasizes that he would not include personal information due to data privacy (I3). Therefore, this shows the delicate balance between utilizing data for efficiency, safeguarding personal information, and preventing misuse.

Bias

AI bias poses a significant ethical challenge, as highlighted in multiple interviews. Interviewee 12 highlights the importance of being aware of biased data. Awareness is an important first step in addressing AI bias, which will be discussed in more detail in chapter 4.3. The interviews illustrate an understanding of how biases in AI systems can result in unfair outcomes, especially in critical areas such as recruitment (I1). One interviewee portrays this concern, stating: *"If we use AI in the recruitment process, women are systematically discriminated against by the AI, as the training data is largely based on white men."* (I6). This example demonstrates the problem of AI perpetuating societal biases due to biased or unrepresentative training data. Interviewee 6 added, *"AI is only as intelligent as the input it has received."* This statement emphasizes that current AI systems do not have the ability to detect or rectify biases unless

explicitly programmed to do so.

Transparency

The issue of transparency also plays a key role, as emphasized in the interviews. Transparency is crucial for several reasons. Firstly, it pertains to being transparent with the customer: According to Interviewee 3, users cannot distinguish between AI-generated and human-generated content. Therefore, Interviewee 3 stated, *“I think that in the context of fake news and the like, it's important to explain to people how the text was created.”* This honesty towards the customer ensures that users are aware of the nature of the content they are interacting with. Maintaining trust and accountability requires this transparent approach.

In addition to being transparent with customers, the use of AI within a company should also be transparent towards colleagues. Interviewee 19 stressed this importance and stated, *“If I am supported by AI, then I deliver better quality (...) And then it should actually be clear to colleagues or the company that this is also always supported by AI.”* Interviewee 17 shares this view and emphasizes fairness among employees.

Besides, the ethical challenge of transparency requires a deeper understanding and disclosure of how AI algorithm's function and make decisions. As noted by another participant, *“One primary challenge of integrating AI is comprehending how the information was generated, specifically on what basis.”* (I8). This highlights the importance of not only efficient AI systems, but also transparent systems that produce understandable results. Moreover, Interviewee 14 provides a specific example of this concern: *“it is a challenge to determine whether what you get back from the AI is really correct. The wording is often chosen in such a way that it sounds very well researched, but unfortunately it is not true”*. The same view is shared by the manager of a consultancy, stating *“we have to scrutinize the results that an AI*

tool produces” (I9). The interviewee notes that consultants have historically approached information in this manner, but the transparency issue is amplified using AI.

Impact on workforce

The adoption of AI in the corporate environment results in changes in the workplace – The workplace is being transformed by AI. Regarding these changes, participants expressed a dual perspective: On one hand, they recognized AI as a tool for enhancing productivity and efficiency, and on the other hand, they acknowledged potential challenges such as job displacement. For instance, Interviewee 3 noted, *“It’s not that AI is replacing existing employees, but that the employees are simply creating more and can therefore generate more output,”* highlighting AI’s role in augmenting human capabilities.

However, this optimistic view is counterbalanced by concerns about job security. Interviewee 4 remarked, *“the risk of colleagues being replaced by AI is also an issue that definitely needs to be addressed,”* pointing to the apprehension surrounding the replacement of human labor with AI. A similar perspective is shared by a manager in the financial services industry, stating *“For us, it’s more about how we deal with employees as a result of using AI (...) AI should always be a help for the employee, but not as a substitute”* (I13). This issue will become increasingly important in the future as AI becomes more widespread and popular.

4.3 ETHICAL FRAMEWORK AND GUIDELINES

In the rapidly evolving field of AI, SMEs encounter distinct obstacles in creating ethical frameworks and guidelines. Since the SMEs interviewed are at different stages with their AI adoption, they are therefore also at different levels regarding guidelines. The handling of ethical concerns pertaining to the use of AI tools in the own company differed across various SMEs.

While many interviewees have not developed an ethical framework for the use of AI, some have laid the foundation for more extensive measures.

Current state of ethical guidelines in SMEs

Many SMEs are currently in the early stages of AI adoption, leading to a tendency to be less concerned with ethics. As stated by one Interviewee, *"We have not yet established any guidelines – this is due to the current status of AI integration."* (I1). The same view is expressed by Interviewee 4: *"We don't yet have any uniform guidelines (...) because the AI doesn't make any decisions for us."* This perspective is common among SMEs where the primary focus is on exploring the potential of AI, with ethical considerations often taking a backseat. This approach, however, does not compromise the significance of their ethical considerations. Rather, it indicates the early stage of their AI journey.

Even if no comprehensive framework conditions are established, many companies have defined what they are using AI for and to what extent, establishing the foundation for ethical use of AI (I3, I6, I8, I14, I15). Effective measures such as labeling AI-generated content and conducting manual checks are already being implemented in some SMEs (I3, I7, I15, I18). These manual checks involve employees critically reviewing AI-generated content to ensure compliance with ethical aspects. To ensure data privacy, personal information are not uploaded to AI tools (I3, I8). Interviewee 14 added, *"Since I don't know exactly what happens to the information that I pass on to ChatGPT or other AI tools, we have a policy that we don't pass on any sensitive information, i.e. no personal information, no company secrets or similar (...) because we simply can't say what happens to this information."* These guidelines demonstrate that SMEs are aware of ethical issues and are actively working on solutions. Regarding future activities, interviewee 16 noted, *"And in the future, as AI expands, we will definitely see an expansion of our guidelines and framework conditions."* Therefore, guidelines will become increasingly

important as the use of AI.

Approaches to developing ethical guidelines

The approaches to developing ethical guidelines vary among SMEs – Some adopt a reactive technique, waiting for concerns to arise before formulating policies, whereas others want to prevent potential issues in advance. On one hand, Interviewee 1 expressed: *“Our approach here will definitely be to first look at what is actually possible and then, if problems arise in the context of ethics, to solve them.”*. On the other hand, initiative-taking SMEs have started implementing fundamental policies such as labeling AI-generated content and conducting manual checks, ensuring a basic level of ethical oversight (I3, I7). Interviewee 6 discussed the creation of a company-specific code of conduct for AI: *“(…) we have defined what we use AI for and what we don't use it for. That works in our small company.”*. In this regard, Interviewee 8 mentioned regarding data privacy: *“We have a clear policy that no client data should end up in the available LLMs”*. Thus, certain guidelines can be helpful in meeting ethical requirements.

Employee training and awareness

Employee training and awareness are crucial factors in addressing ethical issues. Educating employees on the ethical use of AI is a key aspect for SMEs (I7, I9, I17, I19, I20). In this context, Interviewee 7 stated, *“I see the need to sensitize all employees to the topic of ethics in connection with AI integration.”*. Interviewee 20 added, *“The more AI is incorporated into day-to-day work, the more urgent it is for company representatives to attend training courses”*. Common practices include ensuring that employees comprehend the implications of AI and encouraging them to critically evaluate AI-generated outputs. This shift towards more informed and responsible use of AI in business operations is encouraging. By creating awareness of the

ethical problems associated with AI in the corporate context, a great deal can be achieved with few resources.

5. DISCUSSION

AI adoption in German SMEs

Ulrich, Frank, and Kratt (2021) revealed that many German SMEs lack an complete understanding of the importance and potential benefits of AI technologies. Moreover, barriers to AI are a lack of competence, obstacles at implementation, data problems, deficiencies in IT infrastructure, and financial barriers (Ulrich, Frank, and Kratt 2021). It is evident that the field of AI is rapidly evolving. A year ago, most companies interviewed were not using AI – ChatGPT has changed this. OpenAI’s launch of ChatGPT in November 2022 created an accessible path to AI usage in SMEs. Ausat et al. (2023) found in their study that ChatGPT plays an important role for SMEs. The interviewees share this perspective, emphasizing the significance of ChatGPT. In this context, it should be noted that this research demonstrated that the limited resources of these companies led them to rely on external AI providers, like OpenAI’s ChatGPT. “*ChatGPT Is a Tipping Point for AI*” was the headline of an Harvard Business Review Article in December 2022, 2 weeks after OpenAI published its chatbot (Mollick 2022). The reason behind this opinion is that a broader range of people was able to use AI, and that it is useful for a lot of different tasks (Chui, Roberts, and Yee 2022). This study can confirm this, since ChatGPT was the initial AI contact for many of the SMEs and simultaneously a tool that was used for different areas.

There are several reasons for utilizing AI. According to the study by Ulrich, Frank, and Kratt (2021), automation of processes, efficient use of data, acceleration of processes, and savings potential were seen as the greatest opportunities through AI in SMEs. The study’s interviewees

mention not only these advantages, but also ChatGPT's creativity and idea generation as a reason for using this tool. However, the study contradicts the claim of Ausat et al. (2023) that using ChatGPT provides a competitive advantage; using ChatGPT and other AI tools is rather necessary to stay competitive. The perceived necessity of using AI may result in a different ethical approach compared to a voluntary one, resulting in less attention being paid to this issue.

Ethical concerns and guidelines

Alongside the many benefits that come with ChatGPT and other AI tools, there are also ethical concerns that come with them (Wach et al. 2023). Therefore, there is a high significance of responsible AI within organizations to mitigate the risks presented by AI (P.S. 2023). The conducted study showed that SMEs are aware of ethical concerns, but it is not a priority for them. This is contrasted by studies which have found that an ethical use of AI was a priority concern of the companies surveyed (Hangl, Krause, and Behrens 2023). This differences may be due to different levels of AI adoption, as explained above, but need to be considered.

Jobin, Ienca, and Vayena (2019) analyzed several ethical issues in the context of AI, but the most important ones identified are transparency, fairness, non-maleficence, responsibility, and privacy. This complies with the ethical concerns raised in the interviews, namely data privacy, bias, transparency, and AI's impact on the workforce. Wang and Siau (2019) grouped the challenges that face AI in four areas, including data, process, economy impact, and social impact. Data comprises both data privacy and bias, transparency is referring to process, and the impact on the workforce is part of social impact. Economic effects were not considered in the interviews because this is not part of the company-wide use of AI, which this paper is about.

Regarding data privacy, all interviewees emphasized protecting sensitive information as crucial. As all interviewed SMEs are located within Germany, and thus within the European

Economic Area, they are subject to the General Data Protection Regulation (GDPR), which regulates the handling of personal data (Hoofnagle, van der Sloot, and Borgesius 2019). The existing literature mentions solutions for getting data security right, and include privacy by design, data minimization, awareness, and regulatory approaches (Jobin, Ienca, and Vayena 2019). As SMEs in this study have limited options and lack the ability to design their own AI tools, they are dependent on external providers, like OpenAI. Besides, the participants consider some government regulations for the ethical use of AI to be reasonable, as long as they are not excessive. Raising awareness is an effective approach to tackle the issue of data security. It is crucial for SME employees to acquire the necessary skills to work ethically with ChatGPT and other AI tools. During the interviews, training courses were discussed to sensitize employees, highlighting the importance of addressing this matter.

In the context of bias it is important to mention that most AI algorithms require extensive datasets. However, numerous groups within the human population have historically been misrepresented in these datasets. Therefore, AI is susceptible to bias (Norori et al. 2021). Other studies also emphasize that biases in AI encountered by individuals give rise to gender and racial discrimination (P.S. 2023). This is particularly important, since unconscious or conscious biases can impede decision-making processes (Centre for Data Ethics and Innovation 2020). The interviewees are aware of this problem that goes along with the use of AI. In this context, it should be particularly emphasized that this paper examined various industries. However, it is currently more important in which areas AI is used than in which industry. The following example on AI bias in HR illustrates this. Industrial SMEs have HR processes just like consulting firms – When both integrate AI into these processes, similar problems can appear. While AI can work faster and more efficiently than HR managers, problems arise at the same time because the data sets that AI is based on have biases and decisions are made on this basis (Wang and Siau 2019). According to the interviews, AI does not pre-select candidates in the

context of applications for these SMEs. If AI is used in HR, for example for job descriptions, then an employee always again checks this. This approach ensures that an AI tool cannot make any decisions independently and thus reduces the bias of the data. This is consistent with Baker-Brunnbauer (2021), who emphasizes that people should not become dependent on AI systems, but should retain the ability to ultimately make their own decisions. If AI is to make decisions entirely on its own in the future, it is crucial for SMEs to ensure the data is unbiased and to intervene if necessary.

Transparency is a further crucial aspect. AI is often referred to as a "black box", as the algorithms behind the processes are often incomprehensible (Eschenbach 2021). This raises the question of how to interpret the results and how to deal with them. The interviews conducted showed that the problem of transparency in AI tools was present. Therefore, SMEs typically have a manual part in the process, meaning that an AI does not make decisions on its own. Results generated with ChatGPT, for example, are critically reviewed by employees. The varying perspectives among industries are of particular interest. Consultants especially are convinced that this critical assessment is not a problem because it is part of their daily work anyway. Setting up an independent AI tool to gain a better understanding and achieve higher transparency is difficult for the interviewed companies due to their limited resources and company size. This topic of limited resources of SMEs plays a key role in the overall context. As shown, smaller organizations might be more agile and quick to implement AI solutions, simultaneously leading to potential oversights in ethical considerations.

Another concern within the topic of AI is the replacement of jobs, which is also discussed in the literature (Wang and Siau 2019). According to a study by the Boston Consulting Group, AI and other technologies could create a labor shortage of 200,000 to 2.5 million workers in Germany by 2030 (Gregoire 2021). Gruetzemacher, Paradise, and Bok (2020) illustrate the possible extent and found that AI practitioners predict a 50% chance of 90% labor displacement

from AI within 25 years. The study by Campello de Souza, Andrade Neto, and Roazzi (2023) focused on natural language AI, like ChatGPT, which possesses the same or greater intellectual abilities as highly skilled humans, meaning that AI may also take these kind of jobs. In principle, the participants in the interviews believe that AI will cause jobs to disappear, albeit far into the future and not directly related to their own workplace. At the same time, it should be noted that 45% of interviewees were CEOs, which is a factor to consider when discussing perceptions of job displacement, and that the SMEs that were interviewed have not attained the level of AI adoption necessary for job loss, at least in the short term. Nonetheless, there is a need to formulate a plan for handling employees. And this strategy should be developed and communicated in a timely manner.

Managerial implications

The findings of this research have significant managerial implications for SMEs navigating the complexities of AI adoption within an ethical framework. Firstly, it is crucial for managers of SMEs to acknowledge that the adoption of AI is not solely a technological advancement but involves a strategic decision that requires careful examination of ethical aspects. To address these challenges, managers should prioritize developing or adopting ethical guidelines that are tailored to their operational contexts. These guidelines should include explicit protocols for data handling, algorithms auditing, and continuous monitoring of AI applications to ensure ethical compliance.

Moreover, this research emphasizes the significance of establishing an organizational culture that values ethical considerations around the use of AI. This goal can be accomplished through consistent training and awareness initiatives for employees across all levels.

Furthermore, managers should recognize the importance of adaptability in their ethical

guidelines as they look to the future. With the ongoing development and refinement of AI technology and applications, the guidelines governing them must also evolve. Hence, the need for continuously establishing new ethical guidelines as they go along is required. These guidelines are necessary to ensure the ethical use of AI, but they should not be overly restrictive. A balanced approach between regulation and flexibility is crucial.

Limitations and future research

As with all studies, there are limitations to the research. While the study was able to produce concrete results, it also has some limitations that need to be considered. First, the sample size of twenty is an important consideration. In this context, there is no consensus in the literature regarding a specific number that must be reached; instead, the focus is more on achieving data saturation. Overall, the sample size should be neither too large nor too small in order to eliminate the associated problems; between 20 and 30 interviews are mentioned in several sources (Creswell et al. 2007; Marshall et al. 2013).

Besides the number of interviewees, this study is also limited to SMEs in the German context and the diversity of these enterprises. While the sampling process aimed to create a diverse dataset, it does not cover the full scope of German SMEs. Moreover, the interviews were conducted with only one individual from the respective company, who does not necessarily reflect the view of the entire company. Due to the qualitative nature of the study, representativeness of the results is not given, and the findings will not necessarily be generalizable. Therefore, future research on the topic of ethical AI adoption in SMEs should be considered.

The findings of this study can be explored in different contexts (e.g., industry-specific or outside Germany). Further research is necessary to gather the perspectives of frontline decision-makers

responsible for the everyday implementation of AI, rather than focusing on senior management, as is the primary focus of this study. As the subject of AI in SMEs is still in its early stages, it will be intriguing to observe its progress in the corporate environment as AI gains greater prevalence. Moreover, AI is progressing rapidly, and up-to-date research should be accessible for those seeking to remain informed. Finally, future research should use a quantitative approach to confirm the relationships and research directions outlined in this study, which will strengthen the robustness of the findings.

6. CONCLUSION

This study aimed to examine the present landscape of AI adoption within SMEs, with a focus on the ethical concerns associated with this transformative technology. The object was to not only assess the extent of AI adoption in these enterprises, but also to investigate their level of ethical awareness and preparedness.

The study confirms that numerous SMEs are still in the early stages of adopting AI. The significance of ChatGPT's launch is underscored here, as it has enhanced accessibility to AI applications for SMEs. All interviewees possess a fundamental awareness of ethical concerns related to AI. Although not all interviewed companies see ethical considerations in their own business, the majority recognizes ethical issues associated with their own AI adoption and underscores the significance of mindful action. Data privacy, bias, transparency, and implications on workforce were key issues in this context. While the development and implementation of ethical guidelines in SMEs are at varying stages, a fundamental recognition of their significance is present. However, the study revealed a deficiency in the existence of strong ethical frameworks.

This paper emphasizes the significance of SMEs strategically and ethically incorporating AI

into their operations. To ensure successful integration, customized ethical guidelines for data management, and regular monitoring must be implemented. Equally essential is the development of an ethical organizational culture through continuous employee training. Given the rapid evolution of AI technology, it is crucial that ethical frameworks possess adaptability.

Although the qualitative approach provided thorough insights, it also had limitations like restricted sample size and potential interpretation subjectivity. Nevertheless, employing this method revealed a detailed understanding of AI ethics' experiences and attitudes within SMEs. As SMEs' use of AI evolves, ongoing and updated research is necessary. Future studies should additionally use quantitative methods to confirm and expand on the results presented, leading to a deeper comprehension of ethical AI adoption within SMEs.

Overall, SMEs are at a critical stage as AI continues to redefine the business landscape, and their decisions and actions regarding AI adoption will have far-reaching implications. The consequences of these choices will have a lasting impact. This study aims to guide SMEs towards integrating AI in an ethically conscious manner amidst the dynamic business environment.

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APPENDICES

APPENDIX 1: CHARACTERISTICS OF SMEs (European Commission n.d.b)

Characteristics of SMEs	Number of employees	Turnover (in MEUR)
Micro	1 - 9	< 2
Small	10 - 49	< 10
Medium-sized companies	50 - 250	< 50

APPENDIX 2: INDUSTRIES OF SMEs

	Frequency	Percentage	Cumulative Percentage
Business Consulting and Services	11	55%	55%
Information Technology	3	15%	70%
Industrials	3	15%	85%
Communication Services	1	5%	90%
Energy	1	5%	95%
Financial Services	1	5%	100%
Total	20	100%	

APPENDIX 3: POSITION OF INTERVIEWEE

Position of Interviewee	Frequency	Percentage	Cumulative Percentage
CEO	9	45%	45%
CTO	2	10%	55%
Manager	4	20%	75%
Consultant	4	20%	95%
Data Scientist	1	5%	100%
Total	20	100%	

APPENDIX 4: CATEGORIES OF SMEs

Category of SMEs	Frequency	Percentage	Cumulative Percentage
Micro enterprises	4	20%	20%
Small enterprises	11	55%	75%
Medium-sized enterprises	5	25%	100%
Total	20	100%	

APPENDIX 5: OVERVIEW OF INTERVIEWS

Interviewee Number	Firm Category	Position of Interviewee	Industry	Interview Method	Duration (in min)
I1	Small	CEO	Industrials	Video call	30
I2	Small	CEO	Energy	Video call	25
I3	Small	CEO	Communication Services	Video call	30
I4	Small	Consultant	Business Consulting and Services	Video call	40
I5	Micro	CEO	Information Technology	Video call	35
I6	Small	CEO	Business Consulting and Services	Video call	50
I7	Small	Consultant	Business Consulting and Services	Video call	25
I8	Medium	Consultant	Business Consulting and Services	Video call	30
I9	Small	Manager	Business Consulting and Services	Video call	35
I10	Medium	CEO	Business Consulting and Services	Video call	40
I11	Micro	CEO	Information Technology	Video call	25
I12	Small	Data Scientist	Information Technology	Video call	35
I13	Small	Manager	Financial Services	Video call	40
I14	Micro	CTO	Business Consulting and Services	Video call	30
I15	Small	Consultant	Business Consulting and Services	Video call	25
I16	Medium	CEO	Business Consulting and Services	Video call	25
I17	Medium	Manager	Business Consulting and Services	Video call	30
I18	Micro	CEO	Business Consulting and Services	Video call	40
I19	Medium	CTO	Industrials	Video call	40
I20	Small	Manager	Industrials	Video call	30

APPENDIX 6: INTERVIEW GUIDE

Introduction

My name is Frederick Schumacher, I am studying at the NOVA School of Business and Economics, and I am currently writing my master's thesis on the use of artificial intelligence in German SMEs, with a special focus on ethical aspects in this context. The goal of this interview is to gain deeper insights into the real-world challenges of implementing AI in business processes through your experiences and perspectives, especially regarding ethical aspects. I would also like to take this opportunity to reassure you that all the information you provide will be treated in the strictest confidence.

Before we go into the questions, I would like to clarify whether it would be convenient for you if we recorded the interview here via Teams.

Do you have any questions before we start?

Part 1: Current Status of AI Implementation

- To what extent and in what areas is AI currently being used in your organization? How far has AI integration progressed in different departments/areas of your organization?
- What motivated your company to get involved in AI?
- When did your company begin incorporating AI technologies into its operations? How rapidly was the integration executed?
- What AI technologies or applications have already been integrated into or are currently being considered for integration into your organization's operations?
- How has the implementation of AI technologies affected your company's processes and overall performance?
- Have you experienced any significant achievements or obstacles regarding the integration of AI?

Part 2: Ethical concerns in AI Integration

- Are you well-versed in the ethical implications linked with AI integration in business operations?
- How do you define ethical integration of AI in your company?
- Why is an ethical approach to artificial intelligence important to you?
- What ethical concerns arise from adopting AI technologies in your organization? Can you specify ethical concerns that your company has encountered or considered while introducing AI?
- Have ethical considerations ever led to the rejection of AI solutions?

Part 3: Ethical Framework and Guidelines

- Has your company implemented ethical guidelines or a framework for integrating AI?
 - If applicable, can you please elaborate on these policies and how they inform day-to-day procedures? How do they impact decision-making processes regarding AI?
 - If not, why not? Is it planned?
- Do you have any examples or experiences that illustrate the effectiveness or problems of these guidelines?

Closing

Are there any additional areas you wish to explore concerning the ethical integration of AI in your organization? Thank you for your time and valuable insights. I will now analyze all the interviews that were conducted. If you like, I can send you the work as a pdf when it is finished. Are you interested?

APPENDIX 7: OVERVIEW OF FINDINGS – CURRENT STATUS OF AI

IMPLEMENTATION

Interviewee	Quotes
11	"We are at the very beginning when it comes to AI - we are in the trial-and-error phase. An example of where we have used an AI chatbot is in HR. Here we had job advertisements written by an AI."
12	"We use various AI technologies, especially in the area of customer service when analyzing emails and written text. We mainly use an open-source natural language processing library in Python to train our own neural networks based on the incoming emails to either categorize the text or extract knowledge from it. We also use a machine learning model for speech recognition and transcription to convert the voice messages from the phone mailbox into text that can be processed in the CRM."
13	"AI has an impact everywhere for us; definitely most strongly in production, which for us is the content department. However, we now also use AI in marketing, e.g. for marketing messages, marketing graphics and the corresponding creation of newsletters. In addition, many of the tools and software we use are also AI-supported, such as in accounting."
13	"We try to use ChatGPT to enable additional content formats and scaling options, such as segmenting and adapting the content we have via AI elements in other languages and for other user groups. We also use ChatGPT more to refine and round off the various texts. It is important to mention that we now not only use ChatGPT via the website, via the interface, but we have also connected the API so that we can enter the relevant data directly and enrich it with ChatGPT."
14	"Basically, everyone on the team uses AI in some way. We use ChatGPT a lot here in programming, but also in writing/correcting/summarizing texts. I also sometimes use it to generate ideas for presentations. The benefits of using AI for us therefore lie very much in saving time and inspiration."
15	"We are currently using AI to support software development. We use AI to reduce the workload for our employees - the machine does the work for you. Saving time is our main focus."
16	"We have stored the programs we use locally (we do not use the open version). We like to use ChatGPT or Bard, for example, to give statements, reports, sometimes also court rulings, anonymized of course, to create a summary, which makes our work easier and saves us time."
17	"We use ChatGPT to create job advertisements, for example. When we look at job advertisements, we use AI to pre-formulate 60-70% and finalize the last 30-40% manually. AI simply simplifies many processes. We have already prefabricated templates for a wide range of processes, which then only need to be adapted accordingly, saving us work in many areas."
18	"I am endeavoring to employ increasingly large language models (LLMs), such as ChatGPT, in various settings. We view AI as a chance to lessen our workload and boost ingenuity, particularly in standardized areas like our reporting. Additionally, I anticipate that AI will provide support for processes that can be automated in the future."
19	"Within the company, it is very important to us that our colleagues proactively deal with this topic of AI, which is developing very rapidly, in all roles. Specifically, we make heavy use of Midjourney and ChatGPT."

I9	"The work is very different whether you're an entry-level employee or a partner. In the case of research, which entry-level employees in particular do for us, ChatGPT etc. are pretty good, so using them also generates efficiency gains for us. Therefore, my hypothesis would be: ChatGPT has great efficiency advantages for research topics if I want to get 30-60% of the solutions when I have no idea at all and want to get first impressions on topics. But whether I also have efficiency gains if I want to go from 90% to 100% solutions, my assessment at the moment would be no."
I10	"We are still in the early stages of AI integration at our company. We are in a trial-and-error phase. This means, for example, that we use ChatGPT for summaries in order to benefit from time savings and greater efficiency but have not yet set it up company-wide."
I11	"We mainly use AI in software development, i.e. with ChatGPT for software problems, for debugging, with Copilot for code development. We also use translation services, so wherever we have our software in multiple languages, we don't translate it by hand, but basically have it done by language translators such as DeepL. We also have AI-generated images on the website by Midjourney."
I11	"The two main reasons for us to work with AI are firstly the time it saves and secondly the conformity. We have relatively extensive software projects and Copilot does this automatically, so it also helps to standardize how we document, for example, that we naturally must commit to standards in the team, but the software really helps us to do this consistently everywhere."
I12	"As we implement AI solutions for companies in our project business, we naturally do a lot with AI technologies through this alone. We use various AI technologies in our own processes, in particular ChatGPT, Midjourney and DALL-E. I see the biggest advantages of using AI in the speed of certain work processes and in structuring. For example, I can put in extremely unstructured information and get a structured solution back. In most cases, however, it is simply automation of tasks that previously took much longer if you had to do it manually."
I12	"What is also interesting at this point is that we are all computer scientists, which means that we can all deal with AI, we have no skills gap in the sense that we don't know how to implement or realize these things. That's why we have a different attitude in this context compared to other companies right from the start."
I12	"We work with external providers when it comes to AI because we don't have the resources ourselves to set up our own LLM, for example."
I13	"We have a platform that collects machine data and executes various AI-supported applications on this basis. 1) We need this data to simply recognize certain repetitive patterns to see when the machine might fail. 2) We try to automate the processes so that the AI knows that when this or that part has been produced, the corresponding material costs and the sales must be posted to each account. 3) Ecological footprint: AI also plays a major role here because it must determine the timing of the order. The aim is to optimize these deliveries to optimize the carbon footprint."
I14	"We have been integrating AI tools directly into our processes for 6-12 months, namely the classic ChatGPT API solution. The main reason for integrating AI was that we didn't want technological developments to pass us by. And of course, we are always striving to improve our processes and our own performance. When using AI, I find that we simply get more done in the same amount of time. For example, salespeople or recruiters who write job ads use ChatGPT to create a 90% markup for a new job ad. And the 10% is then adjusted again manually."
I14	"We had thought about how we could use AI as profitably as possible for our company and how we could improve processes. We had a few ideas, but abandoned some of them for both ethical and legal reasons."
I14	"We use external providers for AI because we are unable to build this ourselves due to a lack of resources."

I15	"We have not standardized anything in the company in terms of AI that we use in certain processes. This is due to the fact that we are a boutique consultancy that simply does not have the high throughput of processes in terms of volume that can be automated or supported by AI. However, we do use AI selectively in various areas - for example, we look at the suggestions of an AI for a setup and get initial ideas. As AI tools, we use Fireflies on the one hand, and ChatGPT on the other. We use Fireflies to transcribe conversations, and ChatGPT to get some ideas."
I16	"We are still in the early stages of AI integration and currently mainly use ChatGPT for various topics. However, we can already see that saving time is a key issue for us, which is why we are also looking into and using AI."
I17	"We mainly use AI via ChatGPT. We simply started integrating it step by step. We also use ChatGPT when coding SQL. And in addition to ChatGPT, we also use voice AI to create videos. The main reason for using AI tools is that you can complete tasks faster and more efficiently."
I18	"I started with ChatGPT and realized that what happens there is somehow magical, but that this system is also very hallucinatory at the same time. What I've noticed when using it is that I have to know exactly what I want, and even then, there's a kind of residual risk that some complex algorithms in the background will create something that doesn't actually correspond to your idea. With ChatGPT I get to 70% of the final text and then do the last 30% myself; a great time saver."
I19	"We currently use ChatGPT for various applications, mainly HR and personnel. For example, even if we have job descriptions written by the AI, we simply have the added value of not having to do it ourselves from scratch, even if the AI doesn't do the final 100%."
I19	"In the future, we want to greatly expand the use of AI and are already discussing programs such as Microsoft Copilot, where we simply see extreme added value. I also have high hopes for AI when it comes to mass processing. Here, an AI should receive data from third parties, check it and try to automatically assign certain processes in the ERP system."
I20	"We use AI in various areas - we use AI tools in programming for coding, for the translation of texts (as we are also heavily involved in the international environment), but also classically for writing emails or conceptualization. Saving time is the number one reason for using AI. But also, of course, for generating ideas, i.e. being inspired. The ideas that are suggested to you then form the basis for new ideas. The use of AI is therefore also associated with enormous cost savings."

APPENDIX 8: OVERVIEW OF FINDINGS – ETHICAL CONCERNS IN AI

INTEGRATION

Interviewee	Quotes
11	"In the context of HR, we have had job advertisements written with AI, where we have seen that people can be disadvantaged and excluded. Depending on how you ask the question, you get different results - some included a gender asterisk in the text when gendering, others did not. So, I can imagine that there are ethical problems involved if you're not careful."
12	"I haven't even looked at the ethical aspects of AI integration yet - and I don't really see them. Because the customer will benefit, and we can hopefully rule out incorrect processing as far as possible. In this respect, I protect my employees from taking the wrong actions and also protect the customer from mistakes; so, it's actually a win-win for the customer and for us too."
13	"It's not that the AI is replacing existing employees, but that the employees are simply creating more and can therefore generate more output, and that is something that naturally drives us forward and where we simply want to make greater use of it. In other words, we can in principle scale up more without having to invest additional resources, but we are empowering our employees and editors to use AI accordingly."
13	"The user doesn't realize whether it's an AI text or an editorial text. In this respect, we are responsible for ensuring that no nonsense is written. That's why we currently still only ever pre-publish content via ChatGPT as a draft and a colleague looks over it manually to approve the text and then publish it. Content that is created with AI is labeled accordingly, so that we basically enable transparency. And I think that in the context of fake news and the like, it's important to explain to people how the text was created."
13	"With regard to the use of customer data, I think it is also in the interests of all customers if we manage to use data, whether it is from customers or users or third parties, to make the platforms, products and processes more efficient, because at some point it will also be more cost-effective for everyone. I'm not afraid of taking data and putting it into AI and generating something from it. However, we would never use personal data, but rather group data in principle. We can just anonymize it, then bring it back to us, and then you can adapt the text again with personal data."
14	"The most important and biggest issue in this context for us and our clients is data protection. In addition, the risk of colleagues being replaced by AI is also an issue that needs to be addressed."
15	"I am aware of the fundamental ethical aspects in the context of AI. But I don't think that ethical AI integration can be done at company level; it's about the AIs themselves, about the ecosystem in which they operate."
16	"When we fill the AI with content, we don't know exactly how the AI works with it, what data it then combines with our data, what the algorithm is like. This naturally makes it very difficult for us to incorporate ethical concerns correctly and cleanly."
16	"We see a problem in the context of AI bias. AI is only as intelligent as the input it has received. If we use AI in the recruitment process, women are systematically discriminated against by the AI, as the training data is largely based on white men. What makes it difficult for us is to untrain the AI from this view."
17	"Data protection is a major challenge. We are also very careful not to integrate any customer names or candidate names into the AI, because the AI then remembers everything somewhere."

I18	"I would definitely say that I am fundamentally aware of the ethical aspects. That also comes to a certain extent from the position of the job as a consultant, that you always scrutinize all results and information to see whether it is plausible."
I18	"The issue of data security is one that we take very seriously. For us, the question naturally arises as to what information I feed the AI systems with and how high the risk is that this information, especially if it is of a strategic nature, falls into the wrong hands and may be published, even though it is not supposed to be public - so the big question is what information can be processed at all, both public and internal. Moreover, we need to recognize what occurs with the data and who has access to it."
I18	"One primary challenge of integrating AI is comprehending how the information was generated, specifically on what basis. When it comes to transparency, I can tell you in relation to our newsletter, for example, that there would be a note that it was generated by AI-supported tools and perhaps also a bit of a disclaimer that not every piece of information that was communicated is legally binding, but that would be absolutely necessary if you were to use it that way and if no one personally adjusts it again and releases it."
I19	"We are definitely aware of the ethical concerns associated with AI integration in our company. With regard to data protection, we naturally do not upload any customer data to AI tools and of course comply with data protection requirements."
I19	"Another issue in this context is transparency. Of course, we have to scrutinize the results that an AI tool produces. However, we have always done this as consultants. We always have to critically scrutinize and have a certain checklist and check whether what is displayed as a result is correct. But the issue is now becoming even more extreme and even more important with AI."
I10	"Fundamentally, I see ethical concerns associated with AI. However, I do not see this in the context of our company and our daily work. We want to focus more on the opportunities associated with AI than on potential problems, which I don't see for us at the moment."
I11	"I see an ethical problem, especially when it comes to copyright and how to deal with it."
I12	"I would definitely say that I am aware of the ethical issues with AI integration in the company. For me, the ethical use of AI means being aware that AI is always biased."
I13	"As we use AI when dealing with machines, we do not have to take gender aspects into account. For us, it's more about how we deal with employees as a result of using AI. This data simply must not be used to play a person off against the machine. So the AI should always be a help for the employee, but not as a substitute. Simple tasks should be carried out by machines. And the monitoring of the machines still has to be done by a human."
I13	"The AI must be contained. It must always be ensured that the system can be stopped at any time. We must not forget that machines learn from data, which means that the code that was written at the time becomes increasingly complex because the code also becomes longer. This also means that it is becoming increasingly difficult for humans to master this process or this code and to understand where I can do what in order to intervene."
I13	"Data security is a huge issue, because as soon as you have a model that does something automatically, in our case a credit decision, we could ruin ourselves relatively quickly, because if we don't notice that something has changed, then these errors creep in and at the end of the year you have negative financial statements instead of positive ones."

I14	"I am generally sensitized to ethical problems in dealing with AI. I have already taken several courses that dealt with this topic. In regard to transparency, it is a challenge to determine whether what you get back from the AI is really correct. The wording is often chosen in such a way that it sounds very well researched, but unfortunately it is not true. When I ask for data or information, ChatGPT does not show me where the source for this information is, i.e. there is no source information to be found. So I naturally question whether the information I am being shown is correct."
I15	"Data protection is certainly a major issue in our use. Where is the data stored? How is the data processed? We ourselves take care never to upload personal data to these servers. "
I16	"For me, dealing ethically with AI means that we don't use AI without judgment, i.e. we don't use it without reflection. In addition, data security is a huge topic when dealing with AI: Personal data must never end up in tools such as ChatGPT."
I17	"What comes to my mind is fairness among employees: One example would be if only some employees were allowed to use AI because we live in a certain kind of performance culture."
I17	"We know the example of AI being used in recruiting. If we were to use AI in recruiting, which can lead to structural decisions that are negative, I would find that very problematic."
I18	"Basically, I would say that I am aware of the ethical aspects associated with AI. At the same time, I don't feel that I'm offending anyone in my areas of application, although the whole topic of AI is a major ethical challenge. The difficulty I see is the trade-off between ethically correct behavior and maximizing sales. I have the feeling that if I don't use certain data from myself or from some project or other, then certain doors are also closed."
I18	"Ethically correct use of AI is when I have the feeling that I'm not taking anyone's job or stepping on anyone's toes by infringing their rights. As long as that's not the case, I have the feeling that it's ethically okay. My concerns are more that by using this technology, I am also contributing to its progress, i.e. I am also creating a spread of the technology on a very small scale, which at some point will somehow have a presence in our society that we can no longer really escape, but I personally do not feel that I am violating ethical standards or trampling on rights in my daily work."
I19	"There are definitely ethical concerns, which we are already aware of. In particular, security and data protection issues. It is of course important to us that this sensitive data is safe from the eyes of others. However, we must also bear in mind that our primary goal as a company is to maximize benefits. "
I19	"If I am supported by AI, then I deliver better quality, ideally because I have either become faster as a result or my results are better. And then it should actually be clear to colleagues or the company that this is also always supported by AI, simply to be honest and fair to the employees."
I19	"An important topic is fraud in relation to AI, keyword deep fake. How can we know whether emails, texts, audios or videos are genuine or not so that we don't fall for a fraud attempt?"
I20	"What I see as critical is the issue of data protection, because you also enter information into the systems and information can be disseminated further, so you have to take that into account. Personal data should also not be integrated into these tools. It is important that the data that is fed into ChatGPT is all anonymized, because the system can remember the data and process it further, and this should be taken into account, especially in the corporate context."

"Personally, I think it's extremely important to be aware of the responsibility that comes with AI and to be able to take moral responsibility for your own use of it. As already mentioned, the use of AI can save a lot of time, which can potentially lead to fewer employees being needed. For me, this is definitely an ethical concern that goes hand in hand with the use of AI."

APPENDIX 9: OVERVIEW OF FINDINGS – ETHICAL FRAMEWORK AND GUIDELINES

Interviewee	Quotes
11	"We have not yet established any guidelines - this is due to the current status of AI integration. In the future, we will definitely have guidelines so that it is clear to what extent AI may be used. At the same time, however, I must mention that the ethical aspects are not the top priority because it is not yet clear whether and in what form they will arise. Our approach here will definitely be to first look at what is actually possible and then, if problems arise in the context of ethics, to solve them. Besides, I think that we in Europe are too preoccupied with the risks of AI."
12	"I can think about guidelines for ethical AI integration when problems arise. I want to take advantage of the opportunities offered by AI and focus on that for now."
13	"We have a policy that AI-generated text is labeled and checked manually. Beyond that, we have not yet established a framework or any major guidelines for ethical AI integration, but have a relatively lean structure."
13	"We want to give users and customers the greatest possible transparency and indicate even more clearly on the platform in future how we use AI."
13	"I do see a certain need for regulation. But we actually need international, global standards. I'm not a fan of heavy regulation or over-regulation, but certain minimum standards must apply."
14	"We don't yet have any uniform guidelines or guidance on how we deal with ethical aspects of AI. This is mainly because the AI doesn't make any decisions for us. In addition, I don't adopt the points that the AI gives me one-to-one, but always examine everything critically."
15	"I am convinced that it is important to have an ethical framework for AI to ensure, as far as possible, that data protection, copyright, personal rights, etc. are safeguarded in the best possible way. But to the extent that we use AI for our software development, I see no need to set up an ethical framework, as no ethical issues arise for us here."
16	"For an ethically correct approach to AI, we need regulations which, however, must not be too restrictive. I think we need less regulation in terms of application, but we need mechanisms that react quickly and take action when things go in the wrong direction."
16	"We don't have an ethical framework, but we have defined what we use AI for and what we don't use it for. That works in our small company."
17	"I see the need to sensitize all employees to the topic of ethics in connection with AI integration. It is important that no one from the employees would copy&paste results from ChatGPT and then use that. We always check the results again and adjust them accordingly before passing them on."

18	<p>"We have a clear policy that no client data should end up in the available LLMs and the like. We are very strict about this, precisely because we cannot ensure how this data is handled. In order to avoid the problem of data security, or at least to improve it, we are planning to set something up ourselves so that we do not have to access external servers and service providers where we do not know how they handle our data."</p>
18	<p>"I see ethical problems in the topic of fairness/bias in principle, but I don't think we have any in particular, because it is always reviewed by various bodies. In consulting, we always have to challenge and I believe that such an ad (based on an AI-generated HR text that could possibly be sexist) would under no circumstances go online copied 1 to 1 from the model."</p>
18	<p>"We talked about setting up something of our own so that we can understand exactly what happens to the data - of course, we have fewer resources than larger companies, but at the same time there were also fewer approval procedures and in our particular case we also have a lot of people in the company who have a certain amount of expertise. So I don't see the resources as a problem, but rather the advantage of faster integration, where we definitely face the challenges I mentioned, which absolutely have to be clarified beforehand."</p>
19	<p>"Due to the various ethical concerns associated with AI integration, it is clear to us that we have also given guidance to our colleagues, who are of course also aware of how we use AI. As managers, we also have a responsibility to sensitize our team to this issue, just because it sounds good doesn't mean it's okay in every case, you have to take a critical look at it. I believe that you can't just create a framework once, but that you have to keep establishing new guidelines as you go along, without having a standard process in the sense of an approval process that fits all situations."</p>
19	<p>"On the subject of bias/fairness, I can tell you that we have already been working more intensively as a company on behavioural economics and the question of distortions and bias issues in recent years. The fact that AI draws on potentially biased data poses a major problem. We can therefore try to further intensify and develop our awareness of behavioral economics issues."</p>
I10	<p>"We do not currently see the need for guidelines or framework conditions with regard to ethical AI integration. This may have to do with the current status of AI integration and the tasks for which we currently use AI."</p>
I11	<p>"Due to the current size of our company, we don't really need a framework in that sense. In addition, we mainly use AI for software, where I think there are few ethical problems. However, it is basically the responsibility of each of us individually to ensure that the results that come out of it are reasonable. It's not like a text written by an editor, where something can slip through that doesn't fit, but with software it really has to fit and then we determine whether it fits or not and that is the task of each individual when they use it."</p>
I12	<p>"We deal with data privacy by complying with the guidelines, by relying a little on the large providers. We are aware of how and when the models are trained with the data, at least in purely legal terms. We do not allow the models to be trained with our data at all because we use encapsulated instances of the GPT models and not the GPT web interface. So as long as the external partners adhere to the relevant contracts, our data is not used for training, as we are completely encapsulated and all our customers are also completely encapsulated."</p>
I12	<p>"When it comes to transparency, our background in IT means that we know how the AI solutions come about and we have an understanding of this. That's why we don't have any direct guidelines here, but I don't think we need them either."</p>
I13	<p>"Employees are afraid of AI today. That means you also have to get people to say it's not about making you replaceable, so to speak, but about making your work richer, making your work more interesting and, above all, simply more profound, i.e. more valuable."</p>
I13	<p>"We need a culture of error in our company. I see the need for try and error, because that's how we learn the most. We approach mistakes consciously and just have to make sure that they are not catastrophic mistakes or big mistakes. To do justice to this, we do everything in stages or in small steps."</p>

I14	"We have not now established an official framework within the company to prevent people from referring to this information. But we have at least verbally made it clear that we don't actually want to generate any content where we don't have a direct source for it. In other words, we don't use ChatGPT to obtain information. In this case, we only use ChatGPT to provide information that we have collected ourselves with sources behind it, for example, in a nice continuous text, adapted to the relevant target groups with which we then address the texts. So we don't have any official guidelines for dealing with AI, but we do at least have official guidelines for dealing with sources and citations and so on."
I14	"Since I don't know exactly what happens to the information that I pass on to ChatGPT or other AI tools, we have a policy that we don't pass on any sensitive information, i.e. no personal information, no company secrets or similar, and no internal code parts, because we simply can't say what happens to this information."
I15	"We have certain data protection requirements in the company that apply to all colleagues, and they stipulate precisely that no sensitive data is not accessible in any way anywhere outside the defined systems."
I15	"In our case, the feedback from ChatGPT still runs through "human filters". This means that we have a certain quality check in this form before information is passed unfiltered into any result. As long as this is ensured at this point, I don't see any problems with the transparency of the AI."
I16	"Due to our current status in dealing with AI, we do not yet have a real framework for this topic. However, the guideline is that we all need to be careful and reflective when dealing with ChatGPT. And in the future, as AI expands, we will definitely see an expansion of our guidelines and framework conditions."
I17	"For me, an ethically correct approach to AI means having a framework or governance within which AI is allowed to operate."
I17	"I see the need for guidelines for the correct use of AI tools. Within the company: In the sense of being aware of what the advantages and disadvantages of using this program are. When do I use it, how do I use it? And where do I not use it? I would say that there needs to be guidance, governance that defines a company or training."
I18	"I always have a basic mistrust: can this somehow be true and do I really want to draw all the conclusions based on this data completely without reflection? No. I definitely see this need for critical thinking and critical questioning in the answers that AI tools give me."
I19	"Privacy is just as important as data security. You can provide organizational guidelines that employees should not disclose certain sensitive data to the AI when they use ChatGPT to compose a text. At the same time, the AI service provider must ensure that the data is processed correctly in accordance with the GDPR."
I19	"I see the need for an ethical framework for AI integration. It's about setting boundaries; boundaries both for the AI and for the employees in order to provide certainty, certainty for assessing results, certainty for jobs, and if there are guidelines, then it is also clear to everyone how I have to treat a communication or a result."
I19	"It is difficult to avoid becoming a victim of an attempt. However, you can raise employee awareness so that the employee even gets the idea that this could be an attempt at fraud and then checks it out next. So what is important here is raising employee awareness of these issues and having a good IT security system."

"So first and foremost, every employee should look for the obligation to know how to deal with information and AI. But of course I also know that this doesn't always happen. Accordingly, there has to be a framework in the long term. The more AI is incorporated into day-to-day work, the more urgent it is for company representatives to attend training courses. This should be accompanied by AI guidelines that say how and to what extent it may be used."