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**Analyzing the themes of Artificial Intelligence as framed by the
Big Four accounting firms: A Document Analysis**

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Abstract

This study examines how the Big Four accounting firms - Deloitte, EY, KPMG, and PwC - frame the discussion about AI in their documents. This research conducts a document analysis of AI-related reports published by these firms to identify key themes and analyze their narrative strategies. The primary objectives are to uncover what themes of AI are being discussed, and how these themes are being framed by the Big Four firms.

Over the past few decades, AI has emerged as a transformative technology, fundamentally altering organizational processes and creating significant value across industries. Despite its potential, AI adoption remains complex. The Big Four, given their market dominance and influence, play a critical role in guiding organizations through AI adoption, making their perspectives particularly influential.

The analysis identifies twelve key themes discussed by the Big Four firms: Ethical Considerations, Adoption and Investments, Competitive Advantage, Transformative Role, Innovation, Productivity and Efficiency, Benefits for Risk Management, Cybersecurity and Data Privacy, Data Quality, Governance and Compliance, Employees-AI Interaction, and Regulatory Landscape and Initiatives. These themes reveal a multifaceted discussion, highlighting both the opportunities and challenges associated with AI.

Furthermore, the analysis reveals some key findings. Firstly, ethical considerations are framed around responsible AI practices, emphasizing transparency, accountability, and trust. Moreover, the transformative role of AI is underscored as a fundamental force reshaping industries and business processes. Also, productivity and efficiency are extensively covered, positioning AI as a driver of economic progress through automation and optimization. Importantly, cybersecurity and data privacy are framed as paramount challenges, emphasizing the need for robust measures to mitigate risks. Additionally, governance and compliance are discussed as essential for responsible AI deployment, stressing robust governance mechanisms. Further, the Big Four firms emphasize a human-centered approach, advocating for workforce development and upskilling. Lastly, the regulatory landscape is framed as complex and evolving, calling for adaptive and collaborative regulatory approaches.

This study contributes to the understanding of how Big Four firms shape the discussion around AI, offering insights into their strategic framing. By juxtaposing these findings with academic literature, the research provides a comprehensive view of AI's opportunities and challenges, informing future research, policymaking, and professional practice.

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Kevin Skoglund

Kevin Skoglund

A handwritten signature in black ink, appearing to read 'Mattia Bruno', written above a horizontal line.

Mattia Bruno

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1. Introduction

1.1 Background

Over the past few decades, Artificial Intelligence (AI) has emerged as a transformative force across industries, revolutionizing the way organizations operate, innovate, and create value (Aleksandrova et al., 2023). Benlian et al. (2018) define ‘transformative’ as the potential of a new technology to fundamentally alter existing processes, systems, and approaches, leading to substantial improvements for individuals, organizations, and societies. According to Abbass (2021), defining AI in today’s environment is not a self-evident task as AI is everywhere, affecting and blending with everything in our daily lives. The EU AI Act developed by the European Commission (2024) represents a first attempt from regulators to give a specific definition of an AI system:

“‘AI system’ means a machine-based system that is designed to operate with varying levels of autonomy and that may exhibit adaptiveness after deployment, and that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments”
(EU AI Act, Article 3, 2024)

However, Hasan (2022) argues that the definition of AI ten years ago is drastically different from the one of today, and this will probably change in the future as well. As Russell and Norvig (2016) outline, the evolution of AI's definition reflects not only advancements in technology but also shifting perspectives on the capabilities and potential of intelligent systems. AI's conceptual landscape has continuously evolved, mirroring the dynamism of technological progress.

The proliferation of AI across diverse industries has captured the attention of researchers, practitioners, and policymakers alike. The discussion surrounding AI has started to permeate into corporate boardrooms, policy discussions, and public discourse. Aleksandrova et al. (2023) underscore AI's pervasive influence, highlighting its transformative impact on different industries. Consequently, scholarly attention on AI has increased in recent years, reflecting a growing recognition of its significance as a driver of organizational change and competitive advantage (Cao, 2022; Cao & Zhai, 2022).

However, despite the promising potential of AI, many businesses face significant hurdles in effectively adopting and implementing these technologies into their workflows. A survey conducted by MarketingCharts (2024) shed light on the current state of AI adoption among organizations worldwide. The findings revealed that only 23% of organizations, predominantly large multinational corporations, have successfully integrated AI into their operations. This statistic underscores the challenges faced by the majority, with 43% of surveyed organizations either waiting for further advancements in AI technology to gain a better understanding of its potential benefits and risks or initiating research programs to explore AI-related fields.

These challenges extend beyond mere technological considerations and encompass several factors that contribute to the complexity of AI adoption. One of the obstacles is the lack of clear guidelines and best practices to assist organizations in navigating the adoption process (Hasan, 2022). This problem is also reflected in academic literature, where different authors are calling out for more empirical evidence to sustain and improve the theory findings. Raisch and Krakowski (2021) argue that empirical evidence regarding the implementation of theoretical frameworks and conceptual models proposing different typologies of AI adoption within organizational settings remains scarce. Similarly, Enholm et al. (2022) reinforce this notion emphasizing the need for empirical research to bridge the gap between theoretical constructs and practical realities. In other words, this lack of guidance creates uncertainty for organizations willing to adopt AI technologies.

The market power of the Big Four accounting firms is underscored by their formidable presence and dominance in the professional services landscape. With a combined revenue of over \$200 billion in 2023 (Deloitte, 2023; EY, 2023; KPMG, 2023; PwC, 2023), these firms have a significant share of the global market for audit, tax, and advisory services. Notably, they audit most of the world's largest publicly traded companies, commanding a market share of 99.7% within the S&P 500 in 2022 (Ideagen, 2023). This concentration of market power has enabled these firms to diversify their service offerings beyond traditional auditing functions and emerge as leading providers of consultancy and advisory services. Over the past few decades, the Big Four have strategically expanded their services to capitalize on emerging market trends and client demands (Kalaitzak, 2019). Recognizing the growing demand for strategic guidance and expertise in navigating complex business challenges, these firms have heavily invested in consultancy practices, leveraging their deep industry knowledge, analytical capabilities, and global networks to offer a wide range of advisory services, including digital transformation, risk management, and mergers and acquisitions (Kalaitzak, 2019). This strategic change from pure auditing to multidisciplinary consultancy has proven immensely lucrative, with consultancy services accounting for a substantial portion of the Big Four's total revenue, approximately 71% in the fiscal year 2023 (see Table 1). This shift towards consultancy has increased the Big Four's status as the leading advisory firms, having a strong influence and market power in shaping business practices, regulatory frameworks, and industry standards on a global scale (Kalaitzak, 2019).

Table 1 - Big Four firms total revenue by service (in billion)

	Total revenue	Audit	Others	Audit % on Total	Others % on Total
Deloitte	64.9	12.3	52.6	19.0%	81.0%
EY	49.4	15.1	34.3	30.6%	69.4%
KPMG	36.4	12.6	23.8	34.6%	65.4%
PwC	53.1	18.7	34.4	35.2%	64.8%
Total	203.8	58.7	145.1	28.8%	71.2%

Source: Deloitte (2023); EY (2023); KPMG (2023); PwC (2023).

1.2 Problem statement

This study examines the narratives advanced by the Big Four accounting firms regarding the concept of AI. Previous research has had a significant focus on how AI is used within the Big Four through either the audit process (e.g. Fedyk et al., 2022) or in general of the firms (e.g. Heye, 2021). Previous research has also focused on how the Big Four accounting firms are framing for instance sustainability risks (e.g. Rodrigue et al., 2023) or how the framing in the context of audit disclosure recommendations is connected to the size of the firm (e.g. O'Clock & Devine, 1995). These firms occupy a leading position within the professional services sector, offering a comprehensive suite of auditing, consulting, and advisory services to a diverse clientele, including multinational corporations, government agencies, and non-profit organizations (Kalaitzak, 2019). Leveraging their extensive expertise and global reach, these firms influence industry standards, shape regulatory frameworks, and drive business transformation on a global scale (Edgley et al., 2016). To our knowledge, there is little research on how the Big Four accounting firms are framing the discussion around AI technologies. Therefore, given these challenges and the pivotal role that the Big Four accounting firms play in the business landscape, it is interesting to shift the focus to the discussion surrounding AI within these entities.

However, despite the abundance of documents by these entities on AI, there remains a need to analyze and synthesize this information to discern underlying themes, identify emerging patterns, and critically evaluate the narratives constructed around AI within the business landscape. By examining the content, themes, and narratives present in these reports, this study seeks to uncover patterns, trends, and divergences in how Big Four firms discuss AI and its implications for organizations. Moreover, by juxtaposing these findings with insights from academic literature, this research aims to contribute to a more holistic understanding of the opportunities and challenges associated with AI as framed by the Big Four firms, thereby informing future research agendas and professional practice. This is valuable as it allows us to compare and contrast professional perspectives with scholarly discussions, highlighting areas of consensus, divergence, or omission. This integrated approach offers a more comprehensive view of the opportunities and challenges associated with AI, benefiting researchers, policymakers, and practitioners alike.

The lens of framing theory is highly relevant to further explain the interest in AI from the Big Four accounting firms. Exploring the framing approaches adopted by these corporations offers a window into their strategies for shaping the public discussion on AI. According to Malsch (2013), the Big Four can shape the regulatory framework of society, and have a significant impact on global governance. Through deliberate framing of AI discussions, the Big Four can influence how the technology is perceived by the public, investors, and regulators, thereby shaping its potential societal impact.

Ultimately, addressing these needs is relevant not only for businesses seeking to navigate the complexities of AI adoption but also for policymakers, regulators, investors, and broader societal stakeholders interested in understanding the multifaceted implications of AI within the contemporary business environment. By investigating the nuances of AI discussion from

the Big Four accounting firms, this study endeavors to contribute to a more informed and nuanced understanding of the evolving landscape of AI adoption, deployment, and impact, while also highlighting avenues for future research and strategic action.

1.3 Purpose and research question

The purpose of this study is to identify and analyze the main themes related to the discussion on AI as framed by the Big Four accounting firms in their documents.

From above, the research questions can be summarized as:

“What are the main themes discussed by the Big Four accounting firms in their AI-related documents?”

and

“How are the Big Four accounting firms framing the discussion about these themes?”

2. Theoretical framework

The following section of the research contains three main components of the theoretical framework. Firstly, section 2.1 presents previous academic literature on AI, underlining the benefits, risks & challenges but also the regulation aspect. Thereafter, section 2.2 presents the chosen theory used as the foundation for the conducted research. Lastly, section 2.3 summarizes the presented literature.

2.1 Literature review of AI

As previously discussed, part of the purpose of this thesis consists of juxtaposing the findings of our analysis with previous academic literature. Therefore, in this section, we present some findings of previous research by first exploring the transformative potentials of AI. Secondly, delve into the risks and challenges related to AI, and lastly, navigate the complex aspects of AI. By having insights from previous studies, the foundation can be laid for our study which juxtaposes our findings from the analysis of Big Four firms' documents with the findings of academic research, which enriches our understanding of the transformative impact of AI.

The rapid technological innovation of the last years and the increasing computational power led to the explosion of AI tools. The evolution of AI in finance gained momentum with the proliferation of big data (Stoykova & Shakev, 2023). This era witnessed the fusion of AI techniques with vast datasets, promoting more sophisticated algorithms capable of discerning intricate patterns, optimizing investment strategies, and detecting anomalies in financial transactions (Di Vaio et al., 2020). This was further accentuated by the introduction to the general public of generative AI (GenAI) products such as ChatGPT (Stoykova & Shakev, 2023). GenAI refers to advanced artificial intelligence systems capable of creating new content, such as text, images, or even music, based on the data they have been trained on. (Fui-Hoon Nah et al., 2023).

In the context of accounting and finance, AI embodies a spectrum of computational systems, algorithms, and machine-learning techniques designed to mimic human cognition in processing financial data, augmenting decision-making, and automating repetitive tasks (Petkov, 2020). Breakthroughs in natural language processing (NLP) further expanded AI's capabilities by enabling machines to comprehend and extract insights from textual financial reports and regulatory documents (Polak et al., 2020). These advancements led to the development of complex neural networks capable of handling unstructured financial data, facilitating automated auditing, fraud detection, and personalized financial advisory services (Vlad & Vlad, 2021).

Moreover, various studies highlight the different strategic implementations, shedding light on distinct operational areas where AI manifests its efficacy. These areas encompass but are not limited to financial forecasting, risk assessment, fraud detection, and the development of AI-powered financial advisory systems (Yi et al., 2023; Kureljusic & Karger, 2023). One important adoption studied in this context involves the utilization of AI in simplifying routine tasks such as transaction recording, reconciliation, and report generation (Petkov, 2020). Furthermore, Li et al. (2021) accentuate the emergence of AI applications in risk management and compliance, pointing out the role of AI algorithms in detecting anomalies, identifying potential risks, and ensuring regulatory adherence. Additionally, AI has become an invaluable

asset in combating financial fraud. Machine learning algorithms analyze transaction patterns, detect anomalies, and flag potentially fraudulent activities in real time (Aleksandrova et al., 2023). This not only reduces the risk of financial losses but also safeguards the integrity of financial systems.

2.1.1 Benefits of AI

Despite the different ways of implementing AI in business processes, there are some commonly perceived benefits associated with it. The integration of AI technologies offers different benefits, with the most mentioned among them being enhanced efficiency and accuracy in data analysis, enabling faster decision-making processes (Borges et al., 2021). AI systems enable the processing of large datasets more effectively than traditional methods, enhancing the overall precision of financial predictions. This is important in contexts where vast amounts of historical and real-time data need to be processed for accurate predictions. Additionally, predictive analytics facilitated by AI systems contribute to improved forecasting accuracy, enabling companies to anticipate market trends and make informed strategic financial decisions (Kureljusic & Karger, 2023). Consequently, AI systems facilitate faster decision-making processes, an important element in the dynamic landscape of financial markets. This dynamic adaptability of AI systems to changing market conditions provides a competitive advantage, allowing organizations to rapidly adjust forecasting models and stay ahead in a volatile financial landscape (Borges et al., 2021). Furthermore, AI-powered algorithms and machine learning models can lead to reduced error rates. The reduction in error rates is an important outcome, as AI minimizes human biases and automates repetitive tasks, contributing to the reliability of forecasting models (Berdiyeva et al., 2021).

Moreover, the integration of AI can yield substantial benefits in terms of cost reduction and improved productivity (Davenport & Ronanki, 2018). One of the notable advantages is the significant cost reduction achieved through the implementation of AI systems. Particularly, AI can lead to substantial savings in terms of labor and time. Automation of routine and time-consuming tasks, such as data processing, analysis, and report generation, allows financial professionals to allocate their time more strategically. This not only simplifies operations but also minimizes labor costs associated with repetitive tasks, enabling organizations to optimize their workforce and allocate human resources to more value-added activities.

Additionally, AI systems can contribute to improved resource allocation within business processes. By leveraging machine learning algorithms, these systems can analyze historical data patterns and market trends to identify optimal resource allocation strategies. This includes determining the allocation of financial assets, budgetary resources, and workforce based on predictive analytics. The ability of AI models to process vast datasets and identify correlations empowers organizations to make more informed decisions regarding resource distribution (Marotta & Au, 2022). This, in turn, leads to a more effective and targeted allocation of resources, minimizing waste and maximizing the impact of financial decisions. Lastly, the continuous learning capacity of AI systems is another benefit associated with the implementation (Hasan, 2022). These models evolve and enhance their forecasting accuracy

over time as they assimilate new data. This adaptive learning capability positions AI systems as invaluable assets for organizations for the long term, providing a continuous learning loop that improves forecasting strategies.

2.1.2 Risks and challenges of AI

However, the implementation of AI is not without its challenges and limitations, as identified in the literature. One primary limitation is the initial investment required in infrastructure, training, and talent acquisition (Lehner et al., 2022). The implementation of AI systems demands robust computing resources, specialized personnel, and continuous training programs to keep ahead of evolving technologies. Another critical concern is the interpretability and explainability of AI-driven decisions, especially in critical financial scenarios where transparency and accountability are important (Lehner et al., 2022). Stakeholders demand transparency in the decision-making process, and the complex nature of some AI models can make it challenging to provide clear explanations for predictions. Accountability and transparency, as essential elements in financial systems, are fundamental, raising questions about the reliability and trustworthiness of AI-generated forecasts (Munoko et al., 2020). Building trust in AI involves ensuring that these systems are not only transparent but also fair, reliable, and safe (Danielsson et al., 2022). It encompasses the belief that AI will perform as expected without causing harm or bias, and that its operations are transparent and understandable. Establishing trust in AI is crucial for its widespread adoption and effective integration into various sectors (Zdravković et al., 2022).

Furthermore, ethical considerations emerge in the implementation of AI in business processes, particularly concerning the responsible use of AI in handling sensitive financial data. As companies increasingly rely on AI systems to analyze vast datasets, ensuring the responsible use of these technologies becomes fundamental. The handling of confidential financial information necessitates robust safeguards to protect against unauthorized access, breaches, and adversarial attacks (Cao, 2022). The potential consequences of data breaches extend beyond financial losses, encompassing market dynamics and the privacy of individuals. Moreover, a challenge that can emerge during the implementation of AI is related to the quality and availability of historical financial data. Incomplete data can significantly impact the accuracy of AI models. Addressing data quality issues requires not only data cleansing processes but also ongoing efforts to enhance data collection methods and ensure the integrity of the datasets used to train and validate AI models (Jain & Kulkarni, 2023). Lastly, employee resistance and skill gaps represent human-centric challenges, as individuals may resist AI adoption due to concerns about job displacement or a lack of understanding (Raisch & Krakowski, 2021). Ensuring a culture of acceptance and addressing the skill gap is imperative for the successful integration of AI into organizations.

2.1.3 Regulation

When referring to an attempt to standardize patterns of behavior, the term “regulation” is often seen as the meaning of the law, according to Hildebrandt (2018). Regulation is, however, seen as a continuous effort to influence the behaviors of individuals in relation to set standards or objectives to reach desired results. The process involves setting standards,

information gathering, and behavior modification mechanisms, particularly in areas that involve ethical considerations when applied in practice (Black, 2002). Thus, while law is one way of regulating society, there are alternative approaches to shaping human behavior which also can be used (Hildebrandt, 2018).

According to Kaal and Vermeulen (2017), disruptive innovation constantly challenges traditional regulatory approaches, especially due to their reactive nature. When it comes to the disruptive innovation of AI, the challenges are even bigger due to the relation to ethical considerations, and the potential societal impacts are uncertain. Also, if there were irresponsible AI adoption and deployment, it could eventually result in social and political instability, which threatens essential values such as self-determination, human rights, and freedom (Caron & Gupta, 2020). Since human behavior inherently is tied to ethical considerations, regulatory frameworks need to consider that. While norms within regulation characterize societal standards of right and wrong, ethics delves into the essential principles underlying those norms (de Almeida et al., 2021). According to Larsson (2020), the significant gap between ethical guidelines and laws, combined with numerous instances where stakeholders neglect to adhere to these ethical standards, underscores the necessity of transitioning from principles-based to process-oriented AI governance. Zhang and Dafoe (2019) identify the most pressing governance challenges anticipated to impact people globally in the next decade, highlighting concerns related to AI-assisted surveillance violating privacy and civil liberties, the spread of fake and harmful content online, AI cyber-attacks against various entities, and protecting data privacy.

Smuha (2021) emphasizes that AI does not only have beneficial aspects but also legal and ethical risks connected to it. For instance, the risk of using the technology to breach sensitive information or even harming other people through the technology. As a result of this, governments are encouraged to implement guidelines for the fostering of positive innovation and also a way of hindering people from the risks connected to AI. Regulation then seems to be the most appropriate answer to the problem (Smuha, 2021). The author further emphasizes that a regulatory framework that would be capable of effectively harmonizing these requirements and authorizing legal clarity for the stakeholders, has the potential not only to instill confidence in the technology but also to streamline its adoption, thereby enhancing the competitive advantage of nations (Smuha, 2021).

According to Mökander et al. (2022), the suggested European Artificial Intelligence Act (AIA) is seen as the first trial to implement a general legal framework for AI that is supposed to be used by global economies. In that sense, this act will probably be a reference point in the bigger conversations on how AI systems not only can be regulated, but how they should be regulated as well (Mökander et al., 2022).

2.2 Framing Theory

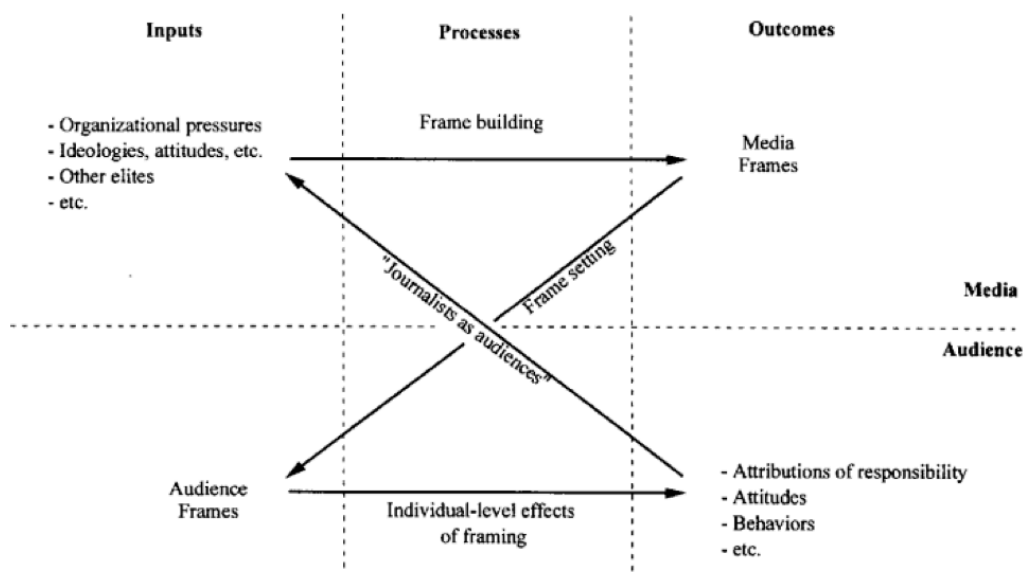
The concept of *framing theory* took foundation in the early 1970's by sociologist Erving Goffman (1974). The theory is portrayed as a concept that involves the selection and salience of certain aspects of perceived reality to influence how information is presented and interpreted in communication. These frames are widely used to define problems, diagnose

causes, make moral judgments, and suggest remedies (Entman, 1993). The author continues by saying that the frame determines the extent to which the majority of individuals perceive, comprehend, and recollect an issue, along with how they assess and decide to respond to it. Additionally, framing theory emphasizes the power of communication in shaping human consciousness and influencing thinking. According to Nelson et al. (1997), the theory can also increase engagement through framing messages in a way that resonates with the audience and increases participation in public discussion. Comprehending these framing impacts enables policymakers to shape policy endeavors in manners that promote sought-after results and decision-making procedures (Nelson et al., 1997).

”The notion of framing thus implies that the frame has a common effect on large portions of the receiving audience, though it is not likely to have a universal effect on all”
 - Entman (1993, p. 54)

Scheufele (1999) adds to the concept of framing theory by providing a well-cited framing model shown in Figure 1. The goal of the model is to break down significant links into inputs, processes, and outcomes. Figure 1 shows that the concept of framing is a continuous process where outcomes of specific processes serve as inputs for subsequent processes (Scheufele, 1999). The four-step process presented by the author is composed of frame building, frame setting, individual-level effects of framing, and a link between individual frames and media frames. The first step, *Frame building*, refers to the process focusing on understanding how media frames are shaped and the types of frames that result from this process. It examines the influences of factors such as organizational pressures or even audience expectations on new content. For this research, this step will only be focused upon since the research concentrates on how the Big Four accounting firms frame their perception of AI in their reports which then categorizes under the step of *frame building*.

Figure 1 - The four-step process presented by Scheufele (1999), p. 115



There are some mentionable possible limitations to the theory. Druckman (2001) argues that there is a tendency to focus on elites manipulating public opinion through framing, ignoring the role of individual agency and cognitive processes in interpreting frames. Worth mentioning that the author does not argue against the significant evidence connected to elite manipulation.

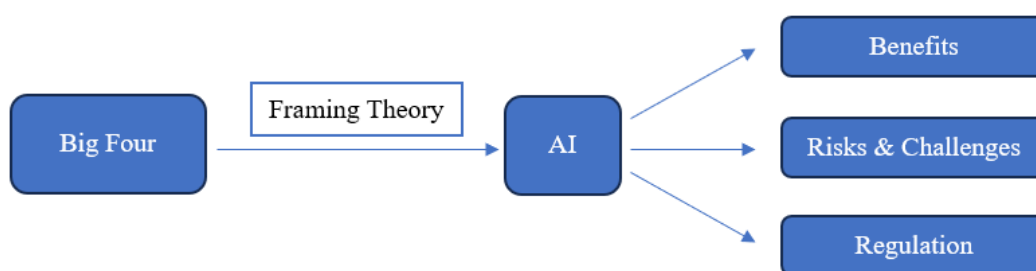
“Framing effects may occur, not because elites seek to manipulate citizens, but rather because citizens delegate to credible elites for guidance. In so doing, they choose which frames to follow in a systematic and sensible way”
- Druckman (2001, p. 1061)

Another limitation of the theory, according to Druckman (2001) is that there is a lack of research on the unique conditions under which framing is effective or ineffective, leading to gaps in understanding the boundaries of framing effects. Another limitation is that since individuals may interpret frames variously based on their own beliefs, values, and experiences, it could possibly lead to variability in the impact of framing on public opinion (Druckman, 2001).

Framing theory is pivotal for understanding how the Big Four companies navigate discussions around AI. They strategically shape perspectives and influence ethical considerations, policy decisions, and their competitive stance. This theory further intends to help the reader and researchers gain more knowledge on how AI is framed by the Big Four, by using the theory together with gained data. Through their framing strategies, these companies aim to mold public perception and discussion surrounding AI. This includes addressing ethical concerns, such as data privacy and cybersecurity, while emphasizing the benefits of AI. Additionally, their framing efforts can impact policy developments and regulatory frameworks.

2.3 Summary of literature

Figure 2 - Summary of previous literature



The literature review highlights the market power and influence of the Big Four accounting firms in the professional services landscape. With their dominance in auditing, consultancy, and advisory services, these firms play a pivotal role in shaping business practices, regulatory frameworks, and industry standards globally (Edgley et al., 2016). They leverage their expertise and authority to guide organizations through complex challenges (Kalaitzak, 2019).

As trusted advisors, they play a pivotal role in guiding organizations through digital transformation, including the integration of AI technologies.

Moreover, the risks and benefits of AI within the professional services industry are explored. From financial forecasting to risk assessment and fraud detection, AI offers various strategic implementations that can improve efficiency, accuracy, and resource allocation within organizations (Borges et al., 2021). Despite the benefits, the literature also identifies several risks and challenges associated with AI implementation. These include data privacy and cybersecurity issues, ethical considerations, and employee resistance (Lehner et al., 2022). Addressing these challenges is crucial for ensuring responsible AI adoption and maximizing the benefits of AI technologies in business processes. By synthesizing these areas, the literature review provides valuable insights into AI implementation that are important for juxtaposing with the Big Four perspectives in the analysis. Additionally, academic literature insights are used to identify main themes and categorize the Big Four documents, as described further in the method section.

Furthermore, the complex relationship between regulation, ethics, and the governance of AI is presented. Various challenges arise in regulating disruptive AI innovation, particularly regarding ethical considerations and potential societal impacts, such as threats to human rights and freedoms if AI adoption is irresponsible (Kaal and Vermeulen, 2017). Key governance challenges for the future, as identified by Zhang and Dafoe (2019), include preventing AI-related privacy violations, fake content dissemination, cyberattacks, and data privacy breaches.

Lastly, framing theory provides a theoretical lens through which to analyze how these firms strategically present and interpret information to influence perceptions, ethical considerations, and policy decisions (Entman, 1993). By framing AI discussions, the Big Four firms aim to shape public perception, influence stakeholders, and position themselves competitively in the market.

In summary, the literature review highlights the Big Four's role in shaping discussions, the benefits and applications of AI according to the academic literature, and the associated risks and challenges. Through this analysis, the study seeks to contribute to a deeper understanding of how the Big Four influence perceptions and discussions surrounding AI, and how these perspectives align or diverge with academic literature.

3. Method

In this chapter, we present the method used in our analysis. In 3.1, the design of the study is presented, followed by the motivation to study the Big Four firms in 3.2. In 3.3 and 3.4 are presented a thorough description of data collection and the process of sampling selection. Then, thematic analysis is introduced in 3.5. Lastly, comments on research quality and limitations of the study are discussed in 3.6 and 3.7.

3.1 Design of the study

By analyzing reports, whitepapers, and other documents, this study seeks to understand how the Big Four are shaping and framing the discussion around AI, leveraging their influential position in the business world. Given the expansive influence of the Big Four on business, finance, and policy-making globally, a focus on their perspectives offers valuable insights into the framing of AI discussion and its potential implications (Kalaitzak, 2019).

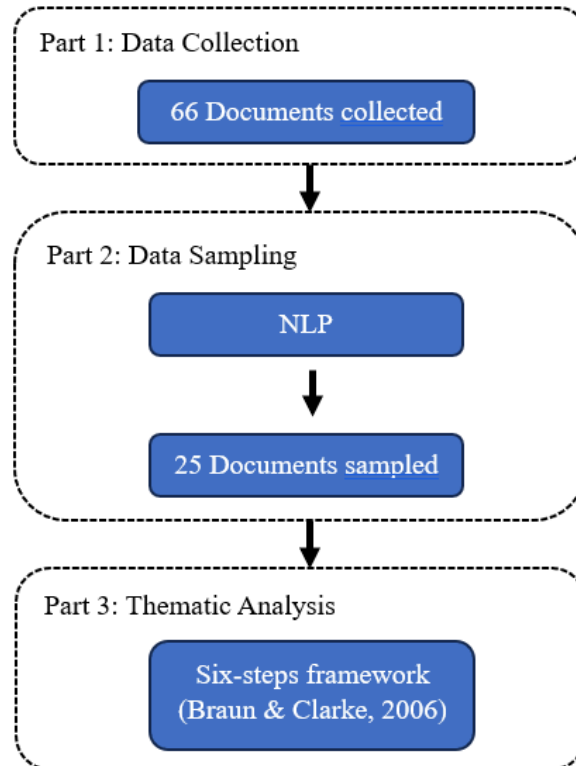
The methodological framework adopted for this study is document analysis, which involves systematic examination and interpretation of written materials to uncover underlying meanings, themes, and patterns. Bowen (2009) argues that document analysis is effective for tracking the development of events, offering a structured framework for examining written materials to discern prevalent themes, ideologies, and narratives. Therefore, document analysis is deemed appropriate for exploring the extensive and varied documents produced by the Big Four, providing insights into their perspectives on AI adoption, implications, and future trends. Through this method, the study aims to identify dominant narratives, recurring themes, and any notable absences or silences in the Big Four's discussion on AI.

Document analysis offers several advantages as a research method (Bowen, 2009). Firstly, it provides access to several readily available data, which can expedite the research process and facilitate comprehensive analysis. Additionally, it is less time-consuming compared to other data collection methods, allowing for efficient extraction of information from a large volume of documents. Morgan (2021) highlights that documents are typically produced for purposes other than research, such as marketing or promotional endeavors. Consequently, they may be subject to biases or strategic framing, particularly in the case of reports from Big Four firms, which often seek to promote their services and expertise in AI. Therefore, researchers must exercise caution to critically evaluate the credibility and objectivity of the documents under analysis, considering the potential influence of vested interests on the content.

For the analysis of the reports regarding AI from the Big Four accounting firms, thematic analysis is employed. According to Bowen (2009), thematic analysis is applied in document analysis to extract key themes, concepts, arguments, and empirical evidence from the texts. Thematic analysis is a form of pattern recognition within the data, with emerging themes becoming the categories for analysis (Fereday & Muir-Cochrane, 2006). Braun and Clarke (2006) highlight that one of the benefits of thematic analysis is its flexibility. Therefore, this method is chosen due to its flexibility and suitability for uncovering underlying meanings and patterns in textual data, aligning well with the aim of identifying themes in the discussion on AI as framed by the Big Four firms.

More specifically, the method of this thesis is divided into two different steps. Firstly, the data collection and data sampling explain how the researchers collected and sampled the documents. Secondly, thematic analysis is applied to the sampled documents, and it represents the data analysis part of the method. Figure 3 summarizes the steps followed in the method by the researchers. Each step is further explained in the next paragraphs.

Figure 3 – Method overview



3.2 The Big Four accounting firms

With the increasing interest in AI, data analytics, and automation, businesses across different sectors have increasingly turned to the Big Four for insights and solutions to harness the transformative potential of these technologies. As trusted advisors, the Big Four play a pivotal role in guiding organizations through the complexities of digital transformation, offering tailored strategies, implementation support, and change management expertise to drive sustainable growth and competitive advantage (Edgley et al., 2016).

The Big Four accounting firms have a significant influence and authority in shaping discussions surrounding emerging technologies like AI. As key players in the professional services industry, their reports, analyses, and recommendations often serve as guiding principles for businesses, policymakers, and stakeholders globally (Kalaitzak, 2019). Within the realm of AI, the Big Four have emerged as prominent commentators, offering insights and strategic advice on the integration and implications of AI technologies across various sectors. According to the companies' annual reviews, investments in AI-related topics are growing. For instance, PwC reported a \$2 billion investment to increase AI capabilities (PwC, 2023), similarly, KPMG plans to invest the same amount of money over the next five

years (KPMG, 2023). Moreover, EY started a three-year investment plan of \$10 billion in 2021 (EY, 2023), and Deloitte launched a practice in 2023 tool to help customers accelerate the pace of AI innovation (Deloitte, 2023).

One fundamental role of the Big Four in the discussion on AI lies in their capacity to frame perceptions and narratives surrounding technological adoption and innovation (Rodrigue et al., 2023). Leveraging their expertise in auditing, consulting, and advisory services, these firms articulate visions of AI's potential to revolutionize business processes, enhance efficiency, and drive economic growth. Moreover, their position in the business world lends credibility to their assessments, thereby shaping organizational strategies and investment decisions related to AI implementation (Rodrigue et al., 2023). Through their research documents, industry reports, and client engagements, these firms explain AI technologies, elucidate their practical applications, and provide roadmaps for successful adoption. By bridging the gap between technological innovation and business practice, the Big Four play a pivotal role in accelerating the mainstream adoption of AI across different sectors.

However, while the Big Four's contributions to the discussion on AI are undeniable, it is essential to acknowledge the potential biases and vested interests inherent in their analyses. As profit-driven entities, these firms may prioritize commercial interests and market opportunities in their representations of AI, potentially downplaying or omitting important factors. Therefore, a critical examination of the Big Four's perspectives on AI is necessary to ensure a holistic understanding of the technology's ramifications and to identify areas where their narratives may diverge from academic literature.

In summary, the Big Four accounting firms occupy a central role in shaping discussions surrounding AI, leveraging their expertise, authority, and global reach to influence perceptions, guide strategic decisions, and facilitate the integration of AI technologies into business ecosystems. However, a nuanced understanding of their perspectives is essential to discern the underlying motivations and implications embedded within their analyses.

3.3 Data collection

In this study, a thorough method is employed to select and gather relevant documents for analysis from the Big Four accounting firms. The selection of these firms is based on their status as leading global professional services organizations renowned for their extensive documents and insights into emerging trends, including AI. As discussed before, these companies have a strong influence on organizations' activities (Edgley et al., 2016). That is, the Big Four firms play a pivotal role in guiding organizations, especially under uncertainty conditions (Kalaitzak, 2019).

Various types of documents are considered eligible for inclusion in the study, reflecting the diverse range of documents produced by the Big Four firms. These may include but are not limited to, annual reports, thought leadership articles, whitepapers, research studies, industry surveys, and advisory reports. Each document type offers unique perspectives and insights

into the firms' viewpoints, strategies, and recommendations regarding AI adoption, implementation, and impact on businesses and industries.

The documents collected are the ones that have been published from 2021 to 2024. This choice reflects the evolving nature of AI technologies and the recent advancements in the field. This timeframe aligns with the rapid evolution and adoption of AI technologies within the business landscape, providing up-to-date insights for analysis (Aleksandrova et al., 2023). Additionally, only documents available in English are considered eligible for this research. Furthermore, the documents have been collected from the global version of the Big Four website, therefore this study does not focus on a specific country.

The first step of data collection involves accessing all available documents directly from the official websites of the Big Four firms, utilizing "Artificial Intelligence" as the primary keyword for the search. Given the vast array of available documents, a purposive sampling strategy is employed to select a representative subset for analysis. This approach involves systematically screening and selecting documents based on predefined criteria. The inclusion criteria for selecting documents are defined to ensure the relevance and comprehensiveness of the data set. Specifically, documents considered for analysis are those explicitly addressing AI-related topics or themes. Documents that just mention AI or that are superficial or promotional materials lacking substantive content are excluded. Both researchers rapidly review all the documents collected, providing comments on their eligibility for inclusion in this study. Following this screening phase, a total of 66 documents are identified as relevant to the study's objectives. The list of all these documents is available in Appendix A.

3.4 Data sampling

After identifying and collecting the 66 documents, the next step consists of sampling this population. During the above described review of all the documents, the researchers took notes on the most frequently discussed topics in the Big Four's documents. Accordingly, five main categories emerge: Benefits, Risks and Challenges, Employees-AI Interaction, Ethical Considerations, and Regulation. These categories do not represent the themes discussed by the Big Four, but, instead, are a first recognition from the authors of main areas of interest that are useful for categorization and sampling purposes. Next, for each category a set of related keywords was created, consisting of synonyms, words with a similar meaning, or words that are related to the same topic. These sets of keywords served as markers to identify and highlight relevant content from within the documents. To do so, the researchers combined the insights gleaned from the academic literature with their own comments based on the first read of all the documents. Additionally, ChatGPT was used to make the keywords lists more accurate and more representative of the main topic as possible. This last step was repeated several times to increase the accuracy of the word lists and avoid any oversight. The full lists of keywords and the prompt utilized in ChatGPT are available in Appendix B.

3.4.1 NLP processing

The next step involved the use of NLP techniques to categorize the documents based on the prevalent keywords in them. NLP techniques are employed in the data selection process as it enables efficient analysis of large datasets (Abram et al., 2020). To do so a Python script has

been used. Building upon the work of Lidvall and Rafstedt (2023), their python script was modified and adapted to align with the different objectives of our research. The script uses the sets of keywords developed before to assess the prevalence of each topic within the documents. The code together with all the materials analyzed in this research are available for anyone to consult and/or use it in a GitHub repository (Bruno & Skoglund, 2024).

More in detail, the script does the following activities:

- 1: Reads the documents and extracts the text.
- 2: Tokenization
- 3: Lower-casing.
- 4: Removes digits and numbers
- 5: Removes punctuation and special characters
- 6: Removes stop words
- 7: Performs lemmatization
- 8: For each document, counts the keywords for each list developed
- 9: For each document, counts the total number of words in it
- 10: Calculates the ratio of keywords to the total number of words for each document and for each category

The script starts by extracting the text from the Big Four reports saved as pdf files. Then, it proceeds by doing some preprocessing tasks to the extracted text. Firstly, it tokenizes the text to get a list of words for each document. Secondly, it removes digits, numbers, punctuation, special characters and stop words. Thirdly, the script performs lemmatization, that is the process of reducing words to their root form to reduce any comparability issues with the lists of keywords. The result of this process is a list of single words for each document. Lastly, it goes on by counting the total number of words and the number of keywords returning the percentage of coverage for all the categories for each document.

Following this, the documents were prioritized based on the extent of coverage for each topic, with the top five documents selected for further analysis within each category. This meticulous selection process resulted in a final set of 25 documents that are deemed appropriate to represent the discussion surrounding AI as framed by the Big Four firms for each category. According to Morgan (2021), the number of documents that should be part of a document analysis varies depending on the research question, the research design and other aspects. The author outlines that the objective of researchers is to reach a number large enough so that new documents do not bring new insights into the analysis. That is, both researchers went through all the 66 initial documents and it is deemed that no new insights

are lost after the number of documents has been reduced to 25. The following table (2) provides the list of the final selected documents that form the core corpus for the subsequent analysis.

Table 2 - List of the 25 final selected documents

Deloitte:

AI for work relationships may be a great untapped opportunity	2022	A
Artificial Intelligence and Rulemaking	2023	B
Ensuring a human-centered approach to AI	2023	C
EU Artificial Intelligence Act	2022	D

EY:

Five generative AI initiatives leaders should pursue now	2023	A
G7 AI Principles and Code of Conduct	2023	B
Harness the productivity potential of GenAI	2024	C
How GenAI is reshaping private equity investment strategy	2024	D
How to balance opportunity and risk in adopting disruptive technologies	2023	E
How to confidently use AI to create value	2024	F
The AI moment is now: how businesses can ready their workforce	2024	G
Why enabling AI's full value requires top-down thinking	2023	H

KPMG:

Cybersecurity considerations 2024	2024	A
Decoding the EU Artificial Intelligence Act	2024	B
Diverging regulatory approaches for AI	2023	C
Trust in AI - Global insights 2023	2023	D
Unlocking the future with Generative AI	2024	E

PwC:

AI och Business Technology	2023	A
For GenAI-enabled threats, fight fire with fire	2023	B
From principles to practice: Responsible AI in action	2024	C
Managing the risks of generative AI	2023	D
Meet modern compliance: Using AI and data to manage business risk better	2021	E
Seven crucial actions for managing AI risks	2023	F
What is responsible AI and how can it help harness trusted generative AI?	2023	G
Who's afraid of AI? Most employees aren't	2023	H

3.5 Thematic Analysis

As introduced above, thematic analysis is used for identifying, analyzing, and reporting themes within data. The first challenge with this method is to decide whether to use an inductive or theoretical approach. Inductive analysis is a data-driven approach where researchers do not try to fit the data into pre-existing themes, but instead let the data guide them (Braun & Clarke, 2006). On the other hand, a theoretical analysis approach is based on theoretical backgrounds and is then a more analyst-driven method (Braun & Clarke, 2006).

For the purpose of this research, a mixed approach is being used. This approach is motivated by Fugard & Potts (2019) who argue that it is common for many analyses to start with a more theoretical approach and perhaps some ideas for themes but then move to a more inductive approach and be led by the data. In this thesis, firstly, the theoretical approach is deployed to provide themes that can guide us throughout the analysis. That is, as explained above, the researchers let themes built on previous academic research guide the sampling process. Secondly, the inductive approach is used as the researchers are guided by the data to construct the final themes object of the analysis. That is, the final themes are directly derived from the documents analyzed in this thesis. The analysis proceeded through several systematic steps. To ensure consistency, the six-steps framework developed by Braun & Clarke (2006) is used in this research project. This framework is deemed appropriate for the purpose of this thesis, and it is also the most cited and used framework in thematic analysis (Maguire & Delahunt, 2017).

Step 1: Familiarize with the data.

The first step in the framework developed by Braun & Clarke (2006) consists of familiarizing yourself with the data. The objective of this step is to get used to the depth and content of the material that is going to be analyzed (Braun & Clarke, 2006). We achieved this step by reading the 25 documents collected and listed in table 2. In this way, we were able to get first impressions on the content of these documents, and to develop a first draft of the main categories that are covered in these documents.

Step 2: Generating initial codes.

The second step of the framework involves the production of initial codes from the data (Braun & Clarke, 2006). Codes identify a portion of the data that is deemed interesting and that allow the researchers to form meaningful groups in which to categorize the data (Guest et al., 2014). Braun & Clarke (2006) argue that codes are more specific and detailed than themes, which are broader concepts that include more codes within them. This step was conducted manually by the researchers on the 25 documents selected for the analysis by using the comment function of pdf reader. Both the researchers proceeded to read and generate codes for the documents. After this code generation phase, we discussed in a meeting our ideas and findings and finally agreed with a list of codes that were deemed important and relevant to represent the Big Four discussion about AI. In Table 3, we illustrate some examples of this code generation step.

Table 3 - Examples of codes

Code	Text
Cybersecurity is a top concern	“In all countries, people rated cybersecurity risks as their top one or two concerns.” (KPMG, 2023D, p.3)
Invest in training employees to use AI	“Teach employees the basics of how generative AI works—and also when to use it and when not to. They’ll also need to learn when and how to verify or modify outputs.” (PwC, 2023F)
Accountability and responsibility are important	“It’s important to establish responsibility and accountability in conversations and interactions among AI and human users.” (Deloitte, 2022A, p. 10)

Step 3: Searching for themes.

The third step consists of categorizing all the different codes generated in the previous step into potential themes (Braun & Clarke, 2006). The objective of this process is to analyze the codes, learn how they are related to each other, and combine them to form candidate themes (Braun & Clarke, 2006). To proceed with this step, the researchers moved all the codes generated from the pdfs to an Excel file. Then, all the codes were manually analyzed by the researchers and categorized into affinity groups. Lastly, each group was assigned a different color based on the content and the affiliation to the main categories developed in the first step. Using Excel and colors to classify different groups is reported to be a useful technique due to the software tool that enables users to sort a table by the color assigned to each cell (Bree & Gallagher, 2016). In this way the recognition of relationships among categories and the emergency of themes is more evident in the file. In Table 4, we present some examples of this process.

Table 4 - Examples of code categorization using different colors

Code
AI improves individual productivity
AI increases efficiency
Invest in training employees to use AI
New skills are needed
It is important to build trust
Adoption is founded on trust

Step 4: Reviewing themes.

The fourth step consists of reviewing the candidate themes and categories found in the previous step. The goal is to identify categories that are not really themes or that can be

merged (Braun & Clarke, 2006). We proceeded by discussing the codes associated with each category to analyze if the association done in the previous step was correct or if some codes fit better into another category. Next, we moved the discussion to the candidate themes to understand and evaluate if the themes found were good or if they could be combined because they express a similar idea or concept.

Step 5: Defining and naming themes.

The fifth step is the final one before starting to produce the report. The objective is to define and refine the themes to obtain the final objects of the analysis (Braun & Clarke, 2006). We achieved this by discussing all the candidate themes that emerged from the previous steps. Finally, we came up with the final set of themes that, according to our analysis, represent the discussion on AI from the Big Four firms.

Step 6: Producing the report.

The sixth and final step of the framework consists of producing the report with the analysis of the Big Four reports. The objective is to tell the story of our data in a concise, coherent, logical, and non-repetitive way (Braun & Clarke, 2006). The result of this final step is presented in the next chapter.

3.6 Research Quality

The research quality of this thesis was paramount to ensure the reliability and validity of findings. Several key steps were taken to uphold high standards throughout the research process. Firstly, clear and specific selection criteria were established to identify and collect relevant documents for analysis. Secondly, a systematic sampling process utilizing a Python script to select documents from the Big Four firms was adopted. The Python script facilitated an unbiased sampling method. Furthermore, the sample size was carefully determined to balance adequacy and manageability, ensuring a comprehensive yet focused dataset. Thirdly, thematic analysis was conducted meticulously to identify, analyze, and interpret recurring patterns and themes within the selected documents. This approach adhered to the six-steps framework developed by Braun & Clarke (2006), which served as the guiding theoretical framework for the analysis of the documents. Furthermore, this framework is one of the most cited in academic works pertaining to thematic analysis (Maguire & Delahunt, 2017). Each document was systematically coded and categorized, with emerging themes cross-checked by both researchers to enhance the reliability of interpretations. Moreover, steps were taken to address potential biases and ensure transparency in data interpretation. A continuous discussion between the researchers ensured the minimizing of subjective interpretations and enhancing the credibility of the analysis. Additionally, both researchers contributed equally to ensure the credibility and reliability of the findings of this thesis.

3.7 Limitations and Ethical Considerations

Braun and Clarke (2006) discusses some limitations to the method of thematic analysis. Firstly, there is an advantage related to the flexibility of thematic analysis which grants for a various range of analytic options for the researcher which means that there can be a lot said about the data that is being used. However, this can also be a disadvantage since creating

specific guidelines for “higher-phase analysis” is challenging which then can result in the researcher being confused on what aspect of the data to use. Secondly, the theoretical framework is of high importance since without the theory, there is limited interpretative power of thematic analysis, which means that the depth and theoretical grounding is vague. Lastly, another limitation that is being presented by the authors is the inefficiency “to make claims about language use, or fine-grained functionality of talk” which other methods such as discourse analysis or conversation analysis can give (Braun & Clarke, 2006).

Nowell et al. (2017) discusses that one limitation of thematic analysis is the time-consuming and resource-intensive part, with emphasizing when there are large datasets or possibly complex research questions which can give the researcher a challenge, especially with limited resources or even time. Also, as there is with other methods, the researchers interpretation of the thematic analysis can be introduced to either bias or effect the identification and progress of themes, especially if there are vague guidelines (Nowell et al., 2017).

Furthermore, the keywords list used in the Python script present some limitations. Firstly, it can be argued that these lists are made by the researchers and, therefore, it is possible that some relevant words have not been included. This can result in a biased sample that does not represent its theme. Secondly, it can be argued that the documents sampled are not representative of the original population. However, a sampling procedure is deemed essential by the researchers and the sample obtained with the Python script is deemed a good representative. That is, using the Python script to select the documents subject of the analysis reduces the biases that would emerge if these documents would be manually selected by the researchers.

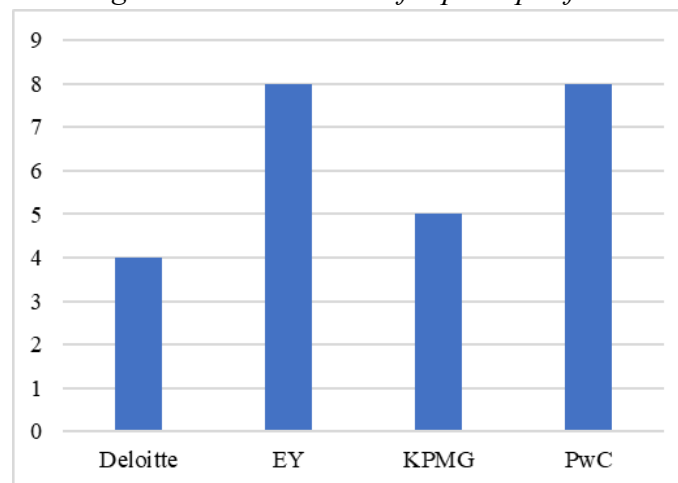
4. Analysis

The following section of the research contains two main components of analysis. Firstly, section 4.1 outlines the themes that are being used throughout the study. Following this, section 4.2 presents the data from the Big Four accounting firms. In particular, 4.2.1 identifies how the Big Four firms are framing ethical consideration issues. Following, 4.2.2 focuses on the strategic impacts of AI, and 4.2.3 on the practical impacts of AI for organizations. Then 4.2.4 presents the findings related to the interaction between employees and AI-systems. Lastly, 4.2.5 focuses on regulation aspects.

4.1 Themes identification

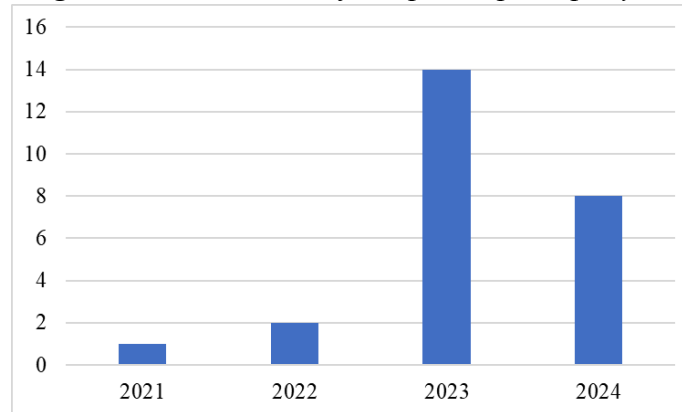
Based on the analysis of documents from the Big Four accounting firms on the topic of AI, several themes emerged, revealing the focal points and priorities within their discussion. In Figure 4, the distribution of the documents collected per firm is shown. EY and PwC are the most represented firms with 8 documents, followed by KPMG with 5 and Deloitte with 4. This distribution indicates a collective interest and engagement by these firms in exploring AI-related topics and signifies a shared commitment to thought leadership in this evolving field.

Figure 4 - Distribution of reports per firm



Moreover, it is also interesting to look at the distribution of these documents based on the year of publication, as it is shown in Figure 5 below. As previously explained, in this thesis only reports published from 2021 to 2024 are considered. Notably, the year 2023 saw a substantial increase in publications, with 14 documents selected, compared to the 2 documents of 2022 and only 1 for 2021. Furthermore, for the 2024 year, we find 8 documents in our analysis. This number reflects the reports published until the end of April, the time of the data collection. Seemingly, if the trend continues in this way, at the end of the year 2024, the number of documents is supposed to overtake the one of 2023, showing a growing trend. These results reveal two key findings. Firstly, the interest from the Big Four firms in AI topics is increasing as time goes by. This can also indicate that organizations are increasingly more interested in AI and its related topics, indicating that the technology is starting to be discussed with some relevance. Secondly, the reports used in our analysis are up-to-date. This is particularly important when analyzing AI, as the technology is rapidly evolving and considerations from three or four years ago can be not relevant anymore.

Figure 5 - Distribution of sampled reports per year



In accordance with the methodological approach previously outlined, we applied the Braun and Clarke's (2006) six-step framework to conduct a thematic analysis of AI-related documents from the Big Four firms. The initial phase involved immersing ourselves in the data to gain familiarity with the content and context of the documents. Subsequently, we systematically coded all relevant materials, resulting in a collection of codes that were then grouped into affinity groups based on common themes and topics. These affinity groups served as the foundation for our subsequent thematic analysis and are presented as initial themes in Table 5.

Table 5 - List of initial themes

Adoption and Investments
Benefits for Risk Management
Challenges and Criticisms to Regulation
Competitive Advantage
Cybersecurity and Data Privacy
Data Quality
Governance and Compliance
Innovation
Other Benefits
Other Risks
Performance and Cost Savings
Productivity and Efficiency
Regulation Initiatives
Regulatory Landscape
Responsible AI
Skills Development
Strategic Implementation
Time and Investments
Transformative Role
Transparency and Accountability
Trust
Workforce Impact

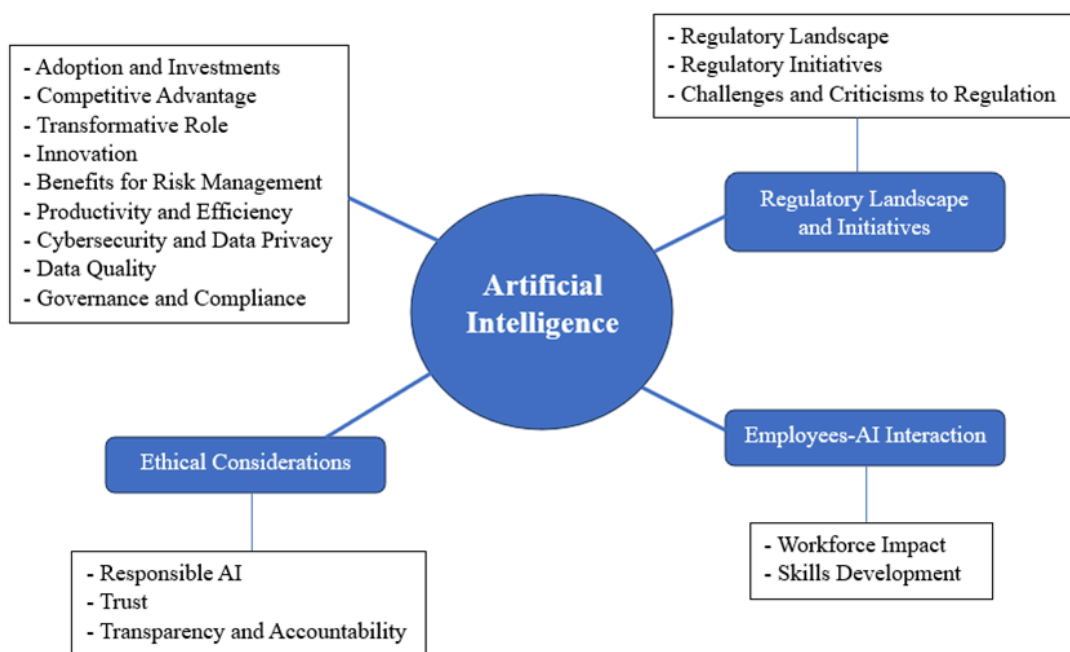
During the subsequent stage of analysis, we engaged in a review and refinement process of the identified themes, following the indications of Braun and Clarke (2006). Notably, several themes underwent consolidation to enhance clarity and coherence in our thematic framework. For instance, themes such as *Responsible AI*, *Trust*, *Transparency and Accountability* were merged to form a cohesive *Ethical Considerations* theme, highlighting the interconnected dialogue on ethical principles within AI discussions.

Further refinement of our analysis led us to reassess certain themes. For instance, the *Time and Investments* theme was found to lack sufficient content to stand independently and was therefore integrated into related topics within our thematic framework. Similarly, the *Strategic Implementation* theme was merged with discussions on *Cybersecurity and Data Privacy* to highlight the integral role of strategic considerations in safeguarding AI technologies. Moreover, residual themes such as *Other Benefits* and *Other Risks* were deemed overly general and lacking in meaningful content, motivating their exclusion from the final thematic map.

Furthermore, we identified synergies between themes such as *Workforce Impact* and *Skills Development*, leading to the establishment of a broader *Employees-AI Interaction* theme. This integration underscores the relationship of topics related to workforce adaptation and skill acquisition in response to AI technologies.

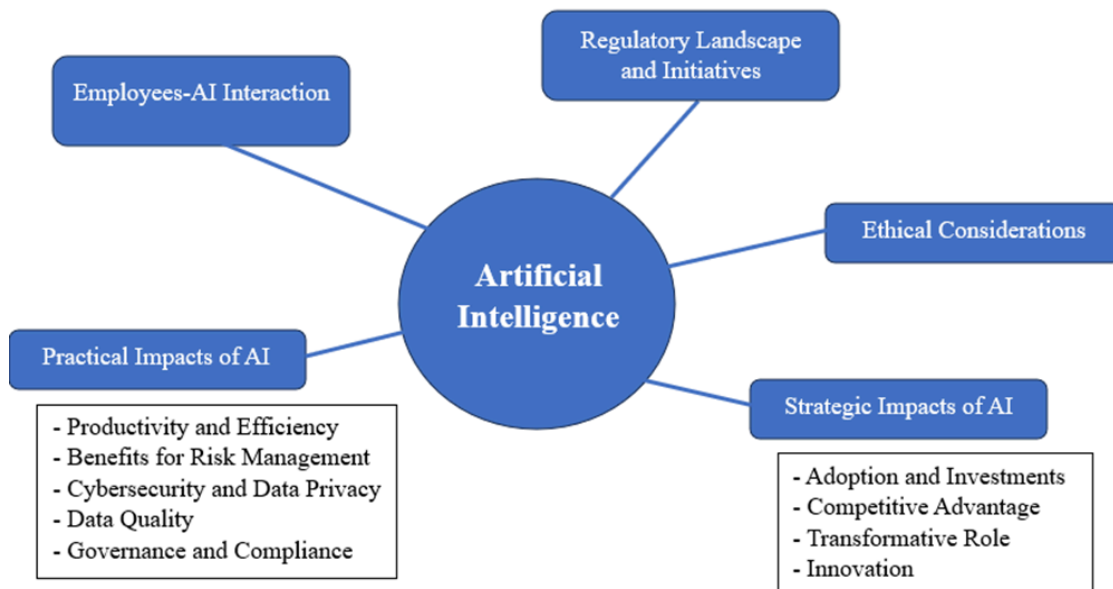
Lastly, the themes *Regulatory Landscape*, *Regulatory Initiatives*, as well as *Challenges and Criticisms to Regulation*, were integrated into a unified *Regulatory Landscape and Initiatives* theme. This consolidation reflects the multifaceted nature of regulatory considerations within the realm of AI adoption and development. This process ultimately yielded an initial thematic map (see Figure 6) that incorporates the themes discussed within the Big Four firms' documents regarding AI.

Figure 6 - Initial Thematic Map



In the final phase of refinement of the Braun and Clarke’s (2006) framework, building upon the initial thematic map, we introduced two new overarching categories, Strategic Impacts of AI and Practical Impacts of AI, to provide a more structured framework for the identified themes. However, the themes in these two new categories are still considered and discussed independently. This categorization is useful to better distinguish the different nature of the themes. The culmination of our analysis presents a total of 12 themes that emerge in the discussion of the Big Four firms on AI, as illustrated in the final thematic map (see Figure 7). This map serves as a comprehensive representation of the nuanced and multifaceted perspectives offered by the Big Four accounting firms on the topic of AI, as revealed through our thematic analysis. Each theme incorporates key discussions and insights into the role, challenges, and implications of AI, highlighting the strategic and ethical considerations shaping this evolving landscape.

Figure 7 - Final Thematic Map



4.2 Framing of themes

4.2.1 Ethical considerations

Based on the comprehensive analysis of Big Four accounting firms' documents concerning AI, it is evident that ethical considerations form a critical and pervasive theme. The discussion surrounding responsible AI, underscored by principles of transparency, accountability, and trust, emerges prominently across these reports. PwC (2023G) emphasizes the importance of responsible AI in ensuring ethical use, particularly with the advent of GenAI. They define responsible AI as a methodology crucial for AI's trusted and ethical utilization, stressing its necessity in the era of GenAI, which introduces unique risks due to its reliance on extensive underlying data.

"To manage both kinds of risks and harness generative AI's power to drive sustained outcomes and build trust, you'll need responsible AI. What exactly is responsible AI? It is a

methodology designed to enable AI's trusted, ethical use. It has always been important, but it has become crucial in the dawning era of generative AI."
(PwC, 2023G)

Similarly, Deloitte (2023C), EY (2023E) and KPMG (2024A) emphasize that organizations face a pressing need to address ethical AI use, given the potential of AI to positively impact human experiences while also posing significant challenges. It emerges that trust and responsible AI are a top concern for companies and addressing these risks correctly can significantly influence the perception of AI.

"While AI presents potential and promise for the human experience, it also presents a real and urgent challenge for leaders to mitigate concerns and create solutions for its responsible application."
(Deloitte, 2023C)

"World leaders are also pressuring organizations for ethical AI use."
(EY, 2023E)

"Increasing trust should be high on the cyber agenda."
(KPMG, 2024A, p. 7)

Moreover, Deloitte (2022A, p. 9) finds that 44% of respondents to their survey identify explainability and transparency as ethical risks. Furthermore, in the same report, Deloitte adds that only 6% of respondents to their survey have no concerns about ethical risks. These results indicate that ethical considerations are important to foster the adoption of AI and efficiently unlock its potential. Moreover, in relation to GenAI, PwC (2023G) argues that companies need responsible AI to overcome the risks related to GenAI, but also to build trust. They continue by saying that responsible AI is crucial, especially since GenAI has been introduced. Also, GenAI can cause the user troubles if not used responsibly, for example copyrighted text, images or even software due to the high amount of underlying data. Responsible AI aims to handle these risks and others as well. Following, Deloitte (2022A, p. 9) presents a number of ethical risks of AI that companies are most subject to: lack of explainability and transparency in AI-decisions; inability to ensure data privacy or appropriately manage consent; safety concerns about AI-powered systems; using AI to manipulate people's thinking and behavior; potential bias or low quality results of AI algorithms; elimination of jobs due to AI-driven automation; use of AI for surveillance.

Despite a growing awareness of ethical implications, EY (2023E) suggests that many companies are not adequately addressing these dimensions in practice, with a concerning lack of strategic prioritization. Key challenges, including transparency and accountability, persist in making AI systems understandable, interpretable, and ethically deployable.

"But progress in this area is alarming."
(EY, 2023E)

To foster AI's acceptance and integration, the Big Four underscore the critical role of trust. Trust is highlighted as a critical factor by the Big Four accounting firms in the context of AI adoption and deployment. They emphasize that establishing trust is essential for organizations leveraging AI technologies. KPMG (2023D) highlights a positive correlation between trust and AI acceptance, suggesting that understanding the technology can significantly influence trust levels. Similarly, PwC (2021E) argues that building trust among stakeholders is one of the challenges related to AI's adoption.

"Our analysis demonstrated that trust strongly influences AI acceptance, and hence is critical to the sustained societal adoption and support of AI."
(KPMG, 2023D, p. 6)

"Whatever the size of the business, one of the challenges of using a system that leverages AI or machine learning is building trust among internal stakeholders."
(PwC, 2021E)

Therefore, trust emerges as a cornerstone of responsible AI practices according to the Big Four accounting firms. They emphasize that building trust is essential for successful AI adoption. To increase trust in AI systems, companies should prioritize understanding the technology and implementing robust assurance mechanisms. This involves transparently demonstrating how AI is used within their operations, ensuring accountability for AI decisions, and fostering a culture of responsible AI deployment. Assurance mechanisms encompass several practices, including rigorous testing and validation of AI models, ongoing auditing to monitor performance and identify biases, and adherence to ethical guidelines and standards. For instance, independent AI ethics reviews, AI ethics certifications, and regular assessments of system accuracy and reliability are crucial steps that signal ethical and responsible AI use.

"People who better understand AI are more likely to trust and accept it, and perceive greater benefits of AI use. This suggests understanding AI sets a foundation for trust."
(KPMG, 2023D, p. 5)

"Three out of four people would be more willing to trust an AI system when assurance mechanisms are in place that signal ethical and responsible use, such as monitoring system accuracy and reliability, independent AI ethics reviews, AI ethics certifications, adhering to standards, and AI codes of conduct."
(KPMG, 2023D, p. 4)

It follows that accountability and transparency are fundamental aspects of responsible AI deployment advocated by the Big Four accounting firms. The lack of clear accountability frameworks adds to the complexity of ethical AI deployment. They recommend establishing clear policies and organizational structures to determine responsibility for AI outputs. Deloitte (2023B; 2023C) stresses the importance of clarity regarding when AI is utilized, how it functions, and who is accountable for its outcomes.

"Put into place an organizational structure and policies that can help clearly determine who is responsible for the output of AI system decisions. This includes identifying who is responsible and accountable for AI outputs."
(Deloitte, 2023B, p. 5)

"Be clear on when AI is being used, how it works, and who is responsible, so you can trust the experiences it creates."
(Deloitte, 2023C)

Lastly, it emerges that addressing ethical considerations demands a comprehensive strategy encompassing responsible practices in transparency, accountability, and trust-building. Companies are urged to prioritize ethical technology use and incorporate innovative strategies into broader compliance frameworks to navigate the ethical complexities of AI deployment effectively.

"Organizations need to develop a comprehensive strategy and vision for managing technology and data ethically."
(EY, 2023E)

In summary, the Big Four's discourse on AI underscores the imperative of responsible AI practices to navigate ethical complexities, build trust, and harness AI's transformative potential ethically and responsibly. The focus on transparency, accountability, and trust underscores the evolving landscape wherein ethical considerations are paramount for successful AI adoption and integration.

4.2.2 Strategic Impacts of AI

Adoption and investments

Based on the analysis of the reports of the Big Four accounting firms, adoption and investment topics connected to AI emerge as themes. According to the EY's (2024C) survey, the implementation of AI is supposed to grow and 84% of the employers are expecting to have implemented AI within the next 12 months. From the same survey, it can be seen that the implementation of AI is related to potential benefits, according to net 33% of the same survey of employees and employers. Deloitte (2023B, p. 19) presents from a survey that 79% of leaders have been reporting that three or more types of AI applications have been applied in their organizations. But also, more than two-thirds of organizations either used AI or are developing AI applications for NLP, according to 2,620 business leaders who took part in Deloitte's survey (2022A, p. 3).

"76% said they plan to increase or significantly increase their organizational spending on AI in the next year"
(Deloitte, 2022A, p. 12).

"\$33 billion in 2021 to \$64 billion in 2025 and will grow 50% faster than the overall software market, with an annual growth rate of 18%"
(EY, 2023H)

There is huge potential in several sectors for AI. One of the hottest sectors where new investments could be made is the technology sector. Organizations that offer state-of-the-art AI-driven products and services can potentially see a rapid pace of growth combined with booming valuations. There are also other industries, for instance the healthcare industry, that can benefit through the use of AI combined with existing practices, which highlights a big diversity in the investment possibilities of AI.

“Investment in AI continues to grow across all sectors, with organisations leveraging AI capabilities to improve predictions, optimise products and services, augment innovation, enhance productivity and efficiency, and lower costs, amongst other beneficial applications.”
(KPMG, 2023D)

Competitive advantage

From the conducted analysis, the Big Four firms stress that competitive advantages can be achieved through the technology advancement, i.e. AI, in today’s society. EY (2023H) stresses that businesses should, through developing new strategies or even new business models with the help of AI, disrupt new markets. This puts the business in a competitive advantage and takes an offensive position in the market. This would be by starting with how AI can help, facilitating comprehensive support for AI. Another aspect is the trust in AI-systems which sets the foundation of competitive advantage as well.

“In the consumer space, platforms that use AI to mine data for insights are already transforming how brands secure loyalty and engage with customers, with the potential for considerable returns.”
(EY, 2024D)

Ey is not alone in stressing that AI brings competitive advantages and that it can be achieved in several areas. PwC (2023D) frames the importance of AI to gain a competitive edge compared to competitors, for instance AI-systems can help to mitigate risk, improve governance and increase the reputation.

“For businesses that want to thrive in today’s data-driven environment, such technology provides a technological competitive edge: table stakes that can both mitigate risk and help greenlight opportunities with more confidence because the risks have been properly evaluated.”
(PwC, 2021E)

“Demonstrating that you’re balancing the risks with the rewards of innovation will go a long way toward gaining trust in your company — and in getting a leg up on the competition.”
(PwC, 2023D)

Transformative role

From the analysis of the Big Four firms’ documents, AI is framed to have a huge impact on the world, changing the normal way of working and increasing efficiency. AI can revolutionize tasks such as document summarization, development of intricate algorithms for machine learning or even sophisticated predictive analytics. Also, AI has transformative

impacts for several sectors such as office and administrative support, business and financial operations, life, physical and social sciences, mathematics and computer programming.

“In these major domains, GenAI stands not just as a tool but as a transformative force, reshaping the way tasks are approached and executed, which can lead to unprecedented levels of efficiency and innovation.”
(EY, 2024C)

To give a concrete number on the estimations of impact, EY (2024F) uses Goldman Sachs view of the transformation. According to them, the US economy is estimated to roughly double in the next 20 years, due to the acceleration of technological progress. Connected to this, it's not only about the outputs, but that it could lead to a higher generation of ideas, boosting scientific and technological progress.

“To illustrate, Goldman Sachs estimates GenAI will raise global GDP in level terms by 7% or ~\$7 trillion, an astounding figure for a single technology. This is roughly equivalent to adding two entire G7 economies, roughly Germany and the UK combined, to the level of world output over the next one or two decades.”
(EY, 2024F)

The transformational role of AI and GenAI can also disrupt several sectors, for instance the automotive industry. Accordingly, KPMG (2024E) states that AI is supposed to increase competition and significantly impact the manufacturing process. Also, AI has the potential to revolutionize predictive maintenance and offer customization to increase customer satisfaction. In relation to the industrial products, KPMG further states that AI serves as a solution in the intricate landscape of the industrial sector by amplifying operational efficiency and automating manual tasks. PwC (2023F) is stating that through the help of AI, organizations can transform several tasks such as high-volume tasks. Additionally, Deloitte (2022D) adds to this aspect by saying that AI is expected to revolutionize many aspects of life.

“With careful planning and execution, AI will transform how, when, and by whom work gets done. All the talk is currently about generative AI, but many other branches of AI, from robotics to machine learning, continue to transform business.”
(KPMG, 2024A)

“AI is becoming an instrumental part of human society, revolutionizing many aspects of life, and its adoption is no longer limited to high tech or specialized industries.”
(Deloitte, 2022D)

Therefore, AI is a game changer and has great potential. EY (2023E) further explains the transformative role of GenAI tools, such as ChatGPT, which is highlighted to be a game changer for legal and compliance issues.

“Large language models (LLMs) like ChatGPT are becoming a game changer for legal and compliance functions with their ability to analyze and summarize vast numbers of documents.”

(EY, 2023E)

Innovation

In the reports provided by the Big Four, it is emphasized that AI is a disrupter and is leading to several potential benefits which are agreed upon. It can also be said that companies are increasingly recognizing AI as a key driver in their expansion plans and that embracing technology is critical for the growth of the business.

“In helping us create more ideas faster, technological progress will accelerate. If realized, this permanently boosts the rate of innovation and productivity. Faster innovation in perpetuity compounds exponentially over time to support extraordinary economic outcomes.”

(EY, 2024F)

“94% of business leaders agreed that AI is critical to success over the next few years.”

(Deloitte, 2023B, p. 19)

“AI is set to shape our future and drive technological transformation forward, and with its current developing pace, AI will drastically redefine the way businesses and customers interact.”

(KPMG, 2024E)

As a result of the innovation within the field of technology, AI is seen as a hot topic and has huge potential. For instance, AI provides substantial assistance in the research and development processes. Through automating routine tasks, employees can allocate more time to engage in advanced cognitive activities such as ideation and addressing intricate problems, areas where these models currently lack the necessary sophistication. But also, AI is explained to support innovative work.

“Recent research from the NBER highlights generative models are useful research assistants, with skills capable of supporting background material gathering, coding, data analysis, and mathematical derivations.”

(EY, 2024F)

What also can be said is that even though the innovation and advancement of technology is significant, AI is not perfect and that it learns by time. That is, AI-systems need time to be tailored to organizations' necessities.

“As an emerging technology, AI isn't perfect and large language models can be biased toward specific words.”

(EY, 2024G)

In summary, the analysis of reports from the Big Four accounting firms highlights significant trends in AI adoption and investment, with 84% of employers planning to implement AI within the next year (2024C) and AI spending projected to reach \$64 billion by 2025 (EY, 2023H). AI investments are particularly strong in the technology sector but also show considerable potential in healthcare and other industries, driving efficiency, innovation, and cost reduction. AI is seen as a key driver of competitive advantage through market disruption

and risk mitigation. It is transforming various sectors by revolutionizing tasks such as predictive maintenance in manufacturing and enhancing productivity in administrative and financial operations, with a profound expected impact on global GDP. Additionally, AI supports research and development, automates routine tasks, and accelerates innovation, making it a critical factor for business success and a transformative force in the modern economy.

4.2.3 Practical Impacts of AI

From analyzing the Big Four accounting firms reports, AI is framed as a disruptive and transformative force within several industries. The Big Four firms are aligned about all the numerous benefits associated with AI, the opportunities connected to it but also how it is transforming industries in several ways.

“Most people (85%) believe AI results in a range of benefits, and think that ‘process’ benefits such as improved efficiency, innovation, effectiveness, resource utilisation and reduced costs, are greater than the ‘people’ benefits of enhancing decision-making and improving outcomes for people.”
(KPMG, 2023D, p. 3)

“We believe that when AI capabilities augment human intelligence, the impact can be extraordinary.”
(EY, 2023A, p. 6)

According to Deloitte (2022A), there will be, through greater AI deployment, more benefits related to the reduction of biases and more objectivity in the decision-making process. Related to the beneficial aspects of AI and how it is used, Deloitte (2022A) presents through a survey conducted in 2022 involving business leaders that 91% of them said the following:

“They are typically using AI in the workplace to generate insights, optimize processes, lower costs, improve collaboration across businesses, etc”
(Deloitte, 2022A, p. 2)

KPMG (2024E) presents several benefits of the implementation of AI. For instance, there are opportunities for financial services where, for instance, AI can improve the customer experience. Within the automotive industry, AI is highlighted to have the potential to revolutionize predictive maintenance, but also to enhance efficiency and productivity, bolster quality assurance, and streamline inventory management. EY (2023A) aligns with this by saying that prior to the exploit of GenAI, AI capabilities were impressive yet limited. They excelled at identifying objects in images, quantifying language in text or even processing large datasets. However, with the increasing evolution of LLMs, it can do things that were unique to humans, such as producing art, making music or even writing books. PwC (2023B) also agrees upon the beneficial sides of GenAI and says that GenAI can improve communication of technical data to stakeholders. They give an example of the usefulness of NLP techniques by saying that generative AI can turn technical data into content that non-technical people can understand.

“Say you’ve had an incident that caused a major business disruption. How do you get the pertinent information into the hands of the right people quickly, in the most concise form? Generative AI can create targeted reports; the one for the company’s chief compliance officer, for example, would focus on regulatory implications, and so on.”
(PwC, 2023B)

The examination of reports from the Big Four accounting firms reveals a detailed exploration of the risks associated with the deployment of AI, reflecting a consensus on the complexities and potential challenges inherent in leveraging AI technologies. A central theme emerging from these reports is the critical importance of striking a balance between the promise of AI technologies and the associated risks. EY (2023A) and PwC (2024C) underscore this necessity by highlighting the gap between AI's potential and its actual integration within organizations. According to EY (2023A, p. 4), only around 22% of organizations surveyed have implemented AI on a large scale, suggesting a gap between AI's potential and its actual integration. Similarly, PwC (2024C) reports that only one-third of respondents have already implemented AI into their processes. It emerges that while AI offers considerable promise, it also introduces a host of new challenges and dangers that demand careful attention and balance within organizational contexts. The Big Four firms caution against overenthusiasm, advocating instead for a balanced perspective that integrates risk awareness into strategic decision-making.

“The successful adoption of disruptive technologies requires a balance between the pursuit of opportunities and the management of risks.”
(EY, 2023E)

“But we do think businesses could face long-term consequences if they don’t balance their enthusiasm for generative AI with a clear-eyed understanding of what they’re up against.”
(PwC, 2023B)

Moreover, the reports advocate for a nuanced approach that recognizes both the transformative opportunities and the need for comprehensive risk management. EY (2024D) emphasizes that success with disruptive technologies like AI demands a delicate equilibrium between seizing opportunities and managing risks effectively. KPMG (2024A) adds depth to this balance, noting that attitudes toward AI range from optimism to skepticism, emphasizing the importance of understanding and addressing both sides of the debate.

“Elsewhere, while opportunities for innovation may exist, they demand a deep understanding of the changing technology landscape to protect the original investments and maximize returns.”
(EY, 2024D)

“While we encourage organizations to move forward with the exciting and vital work they’re doing with AI, at the same time, they should ensure they have a thorough understanding of the complexities involved and how to de-risk their models effectively.”
(KPMG, 2024A, p. 22)

The reports emphasize the urgency of addressing these risks and highlight the critical importance of proactive risk management strategies. The Big Four stress the necessity for organizations to prioritize AI governance frameworks, robust ethical guidelines, and continuous monitoring mechanisms. It is highlighted that, despite growing global awareness of AI risks, there appears to be a gap in awareness and proactive measures among business leaders. This underscores the pressing need to address these challenges more comprehensively. Interestingly, the discussion surrounding AI risks is particularly focused on the complexities of generative AI technologies. While acknowledging its transformative potential, the Big Four underscore the imperative to approach GenAI cautiously due to its fast-evolving risks.

“Executives need to give higher priority to the fast-evolving risks of generative AI.”
(PwC, 2023F)

The analysis reveals that AI technologies significantly increase the risks that companies must address, as highlighted by PwC (2023G) and EY (2023E). Both firms argue that AI not only introduces new risks but also amplifies existing ones. PwC specifically mentions potential new risks arising from company usage and malicious actors.

“But, as with any emerging technology, there are also potential new risks. Some of these risks may come from your company’s use, others from malicious actors.”
(PwC, 2023G)

“But these technologies amplify existing risks such as data breaches and reputational damage while creating new threats.”
(EY, 2023E)

Furthermore, the public perception of these risks is discussed by the Big Four firms. Deloitte's findings (2023B, p. 19) show that AI-related risks are perceived as a significant challenge to scaling AI initiatives by 50% of respondents. Similarly, KPMG (2023D, p. 3) reports widespread concerns regarding AI risks, with 73% of people globally expressing apprehension about potential AI risks. Commonly identified risks outlined in the reports include data privacy concerns, cybersecurity vulnerabilities, regulatory compliance challenges, fear of job displacement due to AI, system failures, and erosion of human rights. Additional concerns such as misinformation, violation of copyright laws, legal and reputational risks are also reported. PwC (2024C) reports that 52% of respondents to their survey believe that misinformation is a risk related to GenAI, and that 46% are concerned about legal and reputational risks.

Productivity and efficiency

Based on the analysis of the Big Four firms documents, the focus is on AI productivity and efficiency benefits. Productivity growth is framed to be the primary driver for AI deployment. Also, it is highlighted that productivity growth is a better indicator than production efficiency and increase in productivity leads to economic growth. However, productivity growth and efficiency are connected to each other. Nevertheless, productivity

growth is usually higher than the increase in efficiency. Through the execution and automation of complex cognitive tasks that previously only humans could execute, AI holds promise to enhance worker's productivity, accelerate capital growth and unleash significant efficiency improvements across the economy.

“Productivity growth — the ability of an entity to produce more with the same labor and capital investment inputs — is the primary driver of long-term economic growth and improvements in living standards.”
(EY, 2024C)

“GenAI-driven productivity is set to provide a substantial lift to the economy, likely delivering a boost worth US\$650b over the next decade and lifting real US GDP by nearly 2.5% by 2033.”
(EY, 2024C)

“As GenAI technologies gain traction, labor productivity will likely rise through direct labor efficiency gains but also through the enhancement of organizations and business processes.”
(EY, 2024C)

In relation to GenAI, EY (2024F) it is entering the world at an important stage in history since the productivity growth from the financial crisis in 2008 has been very slow, compared to pre-crisis. PwC (2023H) also emphasizes that one third of workers believe AI will help increase productivity and efficiency, from their study. Furthermore, there are several areas where AI can optimize processes, for instance in relation to industrial products. KPMG (2024E) presents that AI can enhance operations such as the optimization of production schedules and the identification of inefficiencies, or even assist in the inventory management. KPMG (2024E) says, in relation to consumer products, that there are opportunities highlighted, such as the ability to improve productivity by increasing the automation of labor-intensive tasks. EY (2023H) agrees by stating that automation, modeling and prediction are areas that AI shines in. Also, Deloitte (2023B) shares their view on the opportunities connected to greater deployment of AI and the benefits connected.

“Increased scale of operations through deployment of fully or partially autonomous agents (e.g., robotics for transportation, production, and delivery)”
(Deloitte, 2023B, p. 17)

In relation to efficiency, EY (2024D) states that swift actions can help companies identify tactical opportunities, such as cost savings. In accordance with this, Deloitte (2022A) argues that cost savings and improved performances are reachable through AI.

“There is a confluence of cost and performance improvements in enabling technologies (such as cloud, network speeds, computer vision, and language recognition) that could make it opportune for organizations to implement social AI now.”
(Deloitte, 2022A, p. 13)

EY (2024F) further emphasizes in relation to cost savings that AI is a technology that cuts down the costs of producing a variety of content such as images, code, text and data to

basically zero, but also that through GenAI it is possible to create new designs at very low marginal cost. Connected to this, KPMG (2024E) says the following:

“Generative AI has the ability to drive better business outcomes on a broad front, including commercial effectiveness, operational efficiency, and cost optimization.”
(KPMG, 2024E)

Moreover, in relation to industrial products, KPMG (2024E) finds that AI can enhance operations, for instance by forecasting the price of raw materials and by reducing the production costs. They also show that 62% of global executives report the following:

“An increase in performance or profitability from digital transformation initiatives related to AI and machine learning over the past 24 months.”
(KPMG, 2024B, p. 4)

Benefits for risk management

Based on the analysis conducted of the Big Four’s reports, it can be said that AI is highly connected to risk management. For instance, AI can identify fraudulent behavior, can enhance level-one security operations which results in saving tremendous manual work but also detect threats more efficiently. Risk management unlocks AI potential connected to managing a variety of risks that affect the whole business. Besides this, AI can enhance identity and access management by protecting against unauthorized entry and detecting abnormal activities.

“Analyzing data to identify and prevent fraudulent behavior” & “Simulation of risk scenarios and investment strategies”.
(KPMG, 2024E)

“Generative AI (GenAI), along with other advances, can help compliance and legal departments better manage risk, with the right investment.”
(EY, 2023E)

“Risks to privacy, cybersecurity, regulatory compliance, third-party relationships, legal obligations and intellectual property have already emerged.”
(PwC, 2023D)

“AI can help to ensure data is correct, complete, and secure, and it can monitor usage to ensure data is used as intended.”
(Deloitte, 2023B, p. 11)

Furthermore, EY (2023E) states that through the help of AI, cyberattacks can be recognized much faster which will ultimately not only enhance cost savings, but also increase the security and privacy of sensitive information.

“Companies using AI and automation to detect and respond to these attacks discover data breaches much more quickly than those that don’t, reducing their cost of a breach by nearly US\$2 million.”
(EY, 2023E)

Cybersecurity and data privacy

In analyzing the reports from the Big Four accounting firms concerning AI, a comprehensive story emerges regarding the critical themes of cybersecurity and data privacy within the AI landscape. Firstly, the reports consistently underscore cybersecurity and data privacy as paramount challenges in AI adoption, reflecting the multifaceted risks associated with deploying AI technologies. There is a collective emphasis on implementing robust cybersecurity measures to mitigate risks, particularly concerning data breaches and cyber threats. PwC (2024C) highlights that AI and cybersecurity risks are positively related, indicating that the implementation of AI systems will increase cybersecurity risks that need to be addressed correctly. According to their survey, 64% of respondents believe that AI will increase cyber-attacks. Across various documents, it is evident that cybersecurity risks rank as a top concern globally, resonating deeply with businesses and consumers alike. This shared sentiment underscores the importance of safeguarding data integrity and privacy in the era of AI. Accordingly, KPMG (2023D) finds cybersecurity as one of the top concerns.

“In all countries, people rated cybersecurity risks as their top one or two concerns.”
(KPMG, 2023D, p. 3)

In parallel, a significant emphasis is placed on data privacy concerns within the AI ecosystem. The Big Four firms place a significant focus on data privacy concerns, acknowledging the pivotal importance of safeguarding personal and sensitive information in the AI ecosystem. Reports caution that AI could exacerbate data privacy risks by connecting disparate data sets and potentially breaching privacy controls. This underscores the need for stringent privacy protections and transparent data governance practices in AI development and deployment.

“GenAI applications could exacerbate data and privacy risks;”
(PwC, 2023D)

“More than ever before, they must balance data security and privacy with the broader objectives of the business.”
(KPMG, 2024A, p. 2)

Moreover, the narratives extend to the acknowledgment that AI, while transformative for business innovation, is increasingly leveraged by cybercriminals. This dual-use nature of AI raises complex challenges, with malicious actors exploiting AI capabilities to orchestrate sophisticated cyber-attacks and deep fakes at scale. This nuanced perspective highlights the evolving threat landscape that organizations must confront as AI technologies advance.

“AI systems can develop sophisticated malware, learn from unsuccessful attacks and create more believable phishing campaigns.”
(EY, 2023E)

“Bad actors use automation to scale and increase the speed of their attacks.”
(KPMG, 2024A, p. 26)

“The proliferation of large language models has significantly lowered the barrier to entry for being a threat actor. That will increase the frequency of large-scale attacks.”
(PwC, 2023B)

However, AI can also help companies to detect and defend against these new types of cyber-attack more easily.

“When it comes to defending against gen-AI-powered attacks, the technology itself is proving to be a game-changer.”
(PwC, 2023B)

This dual narrative highlights the complexity of the cybersecurity landscape, where AI's dual-use potential necessitates proactive defensive strategies. The Big Four reports advocate for proactive defense strategies and continual adaptation to counter AI-enabled cyber threats effectively. They stress the need for organizations to strengthen defense systems, update cybersecurity protocols, and integrate privacy considerations into AI applications. There is a clear call for organizational transformation towards embedding cybersecurity and data privacy as core elements of operational culture, alongside financial and sustainability objectives. Companies must constantly improve and update their defense systems to prevent and reduce the risk of cyber-attacks.

“Update cybersecurity, data governance and privacy protocols to help mitigate the risks of malicious actors’ generative AI inferring private data, unravelling identities or conducting cyberattacks.”
(PwC, 2023F)

“Generative AI’s ability to rapidly design and iterate attack methods means that existing defences, designed to detect anomalous activity, will need ongoing retooling to become more agile.”
(PwC, 2023B)

Moreover, the reports stress the necessity of proactive engagement with AI as a strategic imperative rather than a peripheral technological advancement. This proactive approach extends beyond mere adoption to fostering innovation cultures, promoting cross-functional collaboration, and investing in continuous learning and development. EY (2023H) calls for a fundamental shift in approach to fully harness AI's potential, urging organizations to view AI as a driver of broader business transformation rather than a standalone tool. KPMG (2023C) and Deloitte (2023C) similarly emphasize the urgency of adapting risk frameworks and taking a leadership role in shaping the AI landscape to maintain competitive advantage.

“To truly capture value, AI needs to initiate a wider business transformation, requiring a new approach.”
(EY, 2023H)

“All firms, including those within financial services, should proactively begin adapting their risk frameworks now.”
(KPMG, 2023C)

“Private industry should take responsibility for approaching, developing, and using the technology wisely—and taking the lead in this realm can help organisations differentiate.”
(Deloitte, 2023C)

Following, the findings also highlight the imperative for tailored AI strategies that align with specific organizational contexts and business objectives. PwC (2023G) and EY (2023H) stress the need for strategic roadmaps that prioritize impactful use cases, establish robust governance frameworks, and embed responsible AI practices within broader business strategies.

“But to be effective, responsible AI should be a fundamental part of your AI strategy.”
(PwC, 2023G)

“In today’s world, companies need to be digital at their core by embedding data and AI into their comprehensive business strategy.”
(EY, 2023H)

Interestingly, this approach is compared to the strategic importance of sustainability agendas, reflecting a growing recognition of AI’s transformative potential within organizational planning and decision-making processes.

“Companies need to develop a cohesive strategy for responsibly using technology and data, in much the same way as they prioritize their sustainability agenda.”
(EY, 2023E)

“Organizations should strengthen the connection between security and privacy and environmental, social, and governance (ESG) factors.”
(KPMG, 2024A, p. 5)

Additionally, the Big Four highlight the evolving landscape of consumer expectations, where responsible data stewardship and robust cybersecurity measures are becoming decisive factors in maintaining trust and reputation. Organizations are urged to prioritize security, privacy, and sustainability, aligning with broader ESG standards to bolster customer confidence.

“Given a choice, most consumers prefer companies that prioritize security, privacy, and sustainability by adhering to ESG standards.”
(KPMG, 2024A, p. 6)

Ultimately, the narrative presented by the Big Four reports paints a comprehensive picture of the intricate interplay between AI, cybersecurity, and data privacy. They stress the imperative for organizations to not only navigate evolving cyber threats but also embed cybersecurity and privacy considerations as fundamental pillars of their operational ethos. This holistic approach is positioned as vital for long-term business success, societal trust, and sustainable innovation in the AI era.

“Managing these risks requires a cultural shift across the business to embrace security as part of the organization’s standard operating procedures.”
(KPMG, 2024A, p. 10)

Data quality

Based on the analysis of reports from the Big Four accounting firms, it is evident that data quality is a critical concern in the realm of AI, influencing both the efficacy of input and the reliability of output. The examination of Big Four reports regarding AI highlights a robust emphasis on data quality as a fundamental component shaping the effectiveness and trustworthiness of AI applications. Input quality, defined as the integrity and reliability of data sources, is a central theme across these reports. PwC (2023A) underscores the necessity of diverse, accurate, and complete datasets for training AI models, asserting that the quality of input data directly influences output quality. This sentiment is echoed by Deloitte (2023B) and EY (2023E), who caution that low-quality data can lead to erroneous outputs, biases, and false positives, hindering algorithmic effectiveness and commercial viability.

“Data is the key that unlocks the potential in Artificial Intelligence. Data management serves as the cornerstone for ensuring data accessibility, thereby facilitating the deployment of advanced analytics and artificial intelligence.”
(PwC, 2023A, p. 11)

“Data cleaning is time- and resource-intensive. Without high-quality data, innovators cannot train their algorithms to reach thresholds necessary to be commercially viable.”
(Deloitte, 2023B, p. 9)

“For example, machine learning can help a company detect fraud patterns in sales transactions or flag problematic vendors, but using biased or insufficient data could result in false positives.”
(EY, 2023E)

Furthermore, the discussion extends to the challenges associated with AI output quality. Reports from PwC (2023G) and EY (2024F) raise concerns about AI-generated content, emphasizing the potential for inaccuracies or offensive material—referred to as "hallucinations" by PwC—especially within genAI models. EY highlights the decline in output quality over time due to over-reliance on AI tools but proposes a solution involving human review processes to maintain quality and diversity in outputs.

“Generative AI is good at coming up with convincing answers to almost any question you ask. But sometimes its answers are flat-out wrong yet presented authoritatively — what data scientists call “hallucinations.” Hallucinations occur in part because the models are often designed to generate content that seems reasonable, even if it’s not always accurate.”
(PwC, 2023G)

“Workers may become over-reliant on generative tools, leading to some drawbacks. For instance, the diversity of outputs may decline, as the models homogenize the knowledge embedded in training data. Moreover, the average quality of outputs may decline, although this can be mitigated or even reversed with a robust expert-led human review process.”
(EY, 2024F)

Certain AI models, like genAI, pose unique challenges. They may produce incorrect answers, struggle with citations, or exhibit weaknesses in solving math problems. PwC (2023A) highlights these limitations, suggesting that outputs from such models should be considered preliminary drafts requiring human verification and refinement.

“LLMs will frequently generate falsehoods when asked a question that they do not know the answer to. Most of the time they will confidently give a wrong answer.”
(PwC, 2023A, p. 10)

“LLMs for the most part cannot accurately cite sources.”
(PwC, 2023A, p. 10)

“LLMs are often bad at math. They have difficulty solving simple math problems, and they are often unable to solve more complex math problems.”
(PwC, 2023A, p. 10)

Biases emerge as a critical focus area, with Deloitte (2023B) identifying six distinct types of biases affecting AI applications. These biases, ranging from historical and representation biases to measurement and evaluation biases, underscore the complex challenges inherent in data selection, model training, and deployment stages of AI technologies.

“Historical bias – a misalignment between the world “as it is” and the values or objectives required from the model (occurs in selection, measurement, and pre-processing stage of ML).

Representation bias – the under-representation or failure to generalize of a group in the population (occurs in population selection stage of ML).

Measurement bias – choosing poor proxies for real-world quantities (occurs in data measurement selection stage of ML).

Aggregation bias – improper combination of distinct groups into a single model (occurs in model training stage of ML).

Evaluation bias – improper performance metrics or testing/benchmarks that are not representative (occurs in model evaluation stage of ML).

Deployment bias – improper use or interpretation of a model (occurs in outcomes processing stage of ML).”

(Deloitte, 2023B, p. 21)

The reports collectively emphasize that ensuring data quality is paramount to fostering responsible and impactful AI adoption in business contexts. They stress the importance of addressing input quality, output reliability, and biases to leverage AI effectively and ethically. PwC (2023G) specifically calls for a human review process to refine AI-generated content, while Deloitte emphasizes the need for comprehensive strategies to mitigate biases at every stage of AI development and deployment.

“Its outputs can be highly useful, but they may resemble “first drafts.” You’ll likely need to verify these drafts’ output and analyze their quality, then modify them appropriately.”
(PwC, 2023G)

Governance and compliance

Based on the comprehensive analysis of the Big Four's documents concerning AI, an important theme that emerges pertains to governance mechanisms and compliance considerations. The discourse on governance mechanisms emphasizes the necessity of establishing robust tools and methodologies to monitor and evaluate AI systems, accentuating the importance for organizations to conduct meticulous assessments of data requirements and data privacy. Reports highlight the critical role of governance mechanisms in both the deployment and management of AI technologies, advocating for the implementation of clear governance structures that address ethical, legal, and operational aspects of AI deployment. For instance, EY (2023E) underscores the necessity of robust governance to maximize AI's potential, highlighting it as one of five strategic initiatives essential for organizations to balance opportunity and risk in adopting disruptive technologies. This emphasis is further supported by EY (2023E) survey findings from 2022, where nearly half of chief data officers identified clear and effective data governance as a top concern. Similarly, PwC (2023B) stresses the implementation of governance policies and guardrails when integrating AI into operational frameworks.

“Ensuring confidence in AI with a robust governance approach is one of five strategic initiatives EY teams recommends for organizations looking to maximize AI’s potential while meeting its challenges.”
(EY, 2023E)

“Additionally, they should put in place the governance policies and guardrails.”
(PwC, 2023B)

The significance of governance is reinforced by Deloitte (2023B), which underscores the critical role of tools and methods for monitoring and testing AI to address associated challenges effectively. Notably, poor governance mechanisms are identified as potentially increasing AI-related risks and creating new threats, as articulated by PwC (2023D), which warns of legal risks stemming from inadequate supervision of generative AI use.

“Tools and methods for monitoring and testing AI are critical to addressing the challenges presented.”
(Deloitte, 2023B, p. 12)

“Without proper governance and supervision, a company's use of generative AI can create or exacerbate legal risks.”
(PwC, 2023D)

Furthermore, EY (2023E) emphasizes the importance of effective communication regarding governance actions to stakeholders, emphasizing that even with robust governance mechanisms, a breakdown in communication can lead to risks such as biased outcomes or data breaches. Deloitte (2022A) recommends periodic testing of AI applications to prevent vulnerabilities and ensure security control, with PwC (2023D) highlighting the crucial role of auditing in confirming the adherence of AI systems to organizational objectives.

“A lack of good data governance can cause a host of risks – from biased outcomes to data breaches. Even if a company gets all this right, there’s often a breakdown in communicating actions in a form that leadership, investors, employees and other stakeholders understand.”
(EY, 2023E)

“Organizations should test their social AI models against these security frameworks periodically to check for vulnerabilities to existing and emerging threats and deploy appropriate security controls.”
(Deloitte, 2022A, p. 11)

“Auditing will be a key governance mechanism to confirm that AI systems are designed and deployed in line with a company’s goals.”
(PwC, 2023D)

In parallel, compliance emerges as another significant theme within the discussion on AI. Although compliance is closely tied to regulation, it is discussed here due to its portrayal as a challenge for organizations. In the section *Regulation*, instead, the details of emerging regulatory approaches are discussed, with more emphasis on the regulator side. The Big Four emphasize the necessity of continuous monitoring and auditing of AI systems to align with evolving regulatory landscapes, mitigating potential legal and reputational risks associated with non-compliance. The focus on compliance within the context of AI is evident throughout the reports as they extensively cover compliance issues, emphasizing the necessity of aligning AI initiatives with data protection regulations, ethical guidelines, and industry-specific norms. KPMG (2024B) underscores the importance of compliance with strict standards concerning risk management, data quality, transparency, human oversight, and robustness. Similarly, PwC (2023D) highlights the need for compliance offices to keep abreast of new regulations, adjust escalation frameworks, and adapt to emerging regulatory standards to effectively manage AI-related risks.

“Providers will likely need to ensure compliance with strict standards concerning risk management, data quality, transparency, human oversight, and robustness.”
(KPMG, 2024B)

“A nimble, collaborative, regulatory-and-response approach is emerging with generative AI, requiring, perhaps, a major adjustment for compliance officers. Keep up with new regulations and stronger enforcement of existing regulations that apply to generative AI.”
(PwC, 2023D)

In summary, the analysis of reports from the Big Four firms reveals that AI is regarded as a transformative force with substantial benefits across various industries. These firms emphasize AI's potential to improve efficiency, reduce costs, and enhance decision-making by augmenting human intelligence and automating complex tasks. However, the reports also highlight significant risks associated with AI, including data privacy concerns, cybersecurity vulnerabilities, and biases. To harness AI's full potential while mitigating these risks, the Big Four advocate for robust governance frameworks, ethical guidelines, and continuous monitoring mechanisms. They stress the importance of balancing AI opportunities with proactive risk management to ensure responsible and effective AI integration within organizations. Additionally, the reports underscore the importance of high-quality data in AI applications and the necessity of maintaining stringent data governance practices. Overall, the findings suggest that while AI holds promising opportunities for productivity and efficiency gains, it also necessitates careful management of associated risks and challenges.

4.2.4 Employees-AI interaction

Based on the comprehensive analysis of reports from the Big Four accounting firms, a nuanced understanding emerges regarding the evolving interaction between employees and AI technologies. The findings highlight several key aspects and perspectives on how AI is reshaping the workforce and the nature of jobs.

Firstly, the reports emphasize the transformative impact of AI adoption on job roles and the overall workforce experience. Deloitte (2023C) and EY (2024C) both assert that a significant proportion of the workforce will witness changes in their job functions due to the integration of AI tools. Deloitte (2023C) particularly underscores the importance of a human-centered approach to AI, emphasizing its role in augmenting human capabilities and improving the workforce experience.

“AI will also play an increasingly important role in the workforce, not only in augmenting human capabilities, but in improving the workforce experience.”
(Deloitte, 2023C)

“As such, information and knowledge workers across a diverse array of sectors are poised to experience significant impacts due to the diffusion and integration of AI tools.”
(EY, 2024C)

Furthermore, there is a consistent emphasis across the reports on AI's role in enhancing efficiency by automating routine tasks. KPMG (2024A) discusses how automation liberates human resources from repetitive tasks, allowing employees to focus on strategic and higher-value activities. Similarly, Deloitte (2023B) and EY (2024G) advocate that AI will enable employees to concentrate on more complex and strategic endeavors, thus boosting productivity and innovation.

"Many organizations across numerous industries are successfully automating the security function and freeing up human resources by automating routine, repetitive, albeit vital tasks. Work that was previously performed by highly trained professionals, such as vulnerability scanning, log analysis and compliance, can be standardized and executed automatically."
(KPMG, 2024A, p. 26)

"Implemented well, AI could automate and accelerate certain tasks, freeing up workers for higher-value (and higher paid) skilled work."
(Deloitte, 2023B, p. 3)

"Across organizations, roles are adapting to integrate AI tools to allow people to focus on higher-value tasks."
(EY, 2024G)

Interestingly, the Big Four firms frame AI as a tool for augmentation rather than replacement, highlighting AI's potential to work alongside employees to amplify capabilities and productivity. Deloitte's (2023C) concept of "humans with machines" underscores this perspective, emphasizing the collaborative potential of AI and human intelligence.

"At its best, generative AI is not about replacement or substitution; it is about augmentation. AI can enhance human knowledge and experience, resulting in even greater creativity, innovation, and productivity."
(Deloitte, 2023C)

Therefore, the reports stress the critical importance of human oversight and control over AI systems to ensure accuracy, fairness, and ethical decision-making. They recognize that while AI can automate tasks, human judgment remains indispensable in overseeing AI outputs and addressing its limitations. The emphasis on human oversight underscores the recognition that AI systems are not infallible and require continual monitoring and intervention by skilled professionals. EY (2023A, p. 4) argues that there is a lack of specialized AI talent. Similarly, Deloitte (2023B) explains that new types of work will emerge, and new specialized skills are required.

"New types of work and specialized occupations focused on creating, managing, and maintaining AI systems."
(Deloitte, 2023B, p. 17)

In response to the evolving landscape, there is a strong advocacy for workforce development and upskilling initiatives to equip employees with the necessary competencies to thrive in an AI-driven economy. The reports reveal significant skill gaps and a lack of understanding among employees regarding AI technologies. AI is seen as a catalyst for the evolution of job roles, necessitating the acquisition of new skills and competencies. According to a survey conducted by Deloitte (2023B, p. 19) 29% of respondents indicated a lack of technical skills. The Big Four reports advocate for measures to upskill and reskill employees to adapt to the demands of an AI-driven economy. A survey conducted by KPMG (2023D, p. 5) reveals that 50% of respondents do not understand when and how AI is used. Furthermore, there is an emphasis on enhancing employees' understanding of how AI works, promoting digital literacy, and fostering a culture of continuous learning. PwC (2023F) and EY (2024G) suggest that employees need to learn new skills to understand how AI works and to fully unlock its potential and mitigate the risks.

"Teach employees the basics of how generative AI works—and also when to use it and when not to. They'll also need to learn when and how to verify or modify outputs."
(PwC, 2023F)

"To fully benefit from AI, the workforce needs to know how to use it, requiring a bespoke approach to learning."
(EY, 2024G)

Consequently, there is a call from the Big Four firms for substantial investments in employee training programs to bridge these gaps and foster a culture of continuous learning. A survey conducted by Deloitte (2023B, p. 19) finds that 79% of workers have not received the proper amount of training from their employers. Similarly, PwC (2023D) suggests that companies should invest in the training of their employees. Deloitte (2023C) adds that these investments are essential not only to bridge existing skill gaps but also to attract and retain specialized talents capable of leveraging AI technologies effectively.

"Ultimately, the promise of generative AI rests with your people. Invest in them to know the limits of using the technology as assistant, co-pilot or tutor, even as they exploit and realize its potential. Empower your people to apply their knowledge and experience to critically evaluate the outputs of generative AI models — after building your enterprise risk guardrails."
(PwC, 2023D)

"Considering that in the near future, every college graduate will be generative AI native, organisations should anticipate delivering training and workplace experiences using AI to attract and retain this new generation of talent."
(Deloitte, 2023C)

In summary, the Big Four reports collectively provide a comprehensive view of AI's implications for employees, highlighting the potential for efficiency gains, the imperative of human oversight, the necessity of skill development, and the urgency of investing in

workforce training. By framing AI as a transformative force requiring a blend of technological and human-centered solutions, these reports contribute significantly to shaping the discussion on responsible AI adoption within organizations.

4.2.5 Regulatory Landscape and Initiatives

Through the examination of reports from the Big Four accounting firms, it emerges that complexity is the key word for AI regulation, which is driven by hasty advancements and ethical concerns. There are numerous regulatory frameworks connected to AI, with the EU AI Act being one of the front ones. However, there are numerous challenges for regulators, which include the need for flexible regulation and harmonization across jurisdictions. Even though the progress of the regulation, the advancement of AI is an ongoing challenge for the policymakers and businesses which underscores the importance of needing flexible and collaborative approaches to address the transformative impact of AI.

From the analysis of the Big Four reports, the regulation landscape associated with AI is lifted several times and described as a tough point for regulators due to the quick advancements within the technology. Due to risks and ethics questions being made, there have been a number of regulatory initiatives, for instance the EU Artificial Intelligence Act. There is also the well-known General Data Protection Regulation (GDPR) related to data privacy concerns.

“What can be considered as the leading attempt to enact a horizontal regulation of AI, the proposed EU AI Act applies to all providers, importers, distributors and users of AI systems that impact persons located in the EU.”
(Deloitte, 2022D, p. 1)

In accordance with this, KPMG (2024B) presents that the EU AI Act aims to foster AI adoption while mitigating its risks. This will ensure that AI systems are safe, foster AI investment, improve governance but also promote a harmonized single EU market for AI. The Act aims to stimulate innovation by offering greater transparency regarding AI systems, managing and reducing risks and adopting the best practices. The EU AI Act establishes a framework for comprehending the potential risks linked with AI. It categorizes AI systems according to their potential risks and segments them into various categories based on the data they gather and the decisions or actions executed using that specific data.

“The AI Act's primary goal is to establish a uniform and horizontal legal framework to promote the uptake of AI systems while providing a high level of protection against their harmful effects. This framework can help to build trust in AI technology and give individuals and organizations greater confidence in using it.”
(KPMG, 2024B, p. 12)

It is worth noting that these practices surrounding AI in regards to the regulation are different between countries. For instance the UK takes on a more principle-based approach and does not have a specific regulator body, in contrast to the EU.

“In contrast to the EU, no dedicated regulator would be established to deal with AI. Instead, existing regulators (i.e. the FCA, PRA and Bank of England (BoE) in financial services) would fold AI into their current remits — as they are best-equipped with the relevant domain-specific expertise.”
(KPMG, 2023C)

There are urges to watch the regulatory landscape, particularly concerning the influence on privacy, AI bias and the governance connected to AI, according to PwC (2023G). Deloitte (2023B) says that policymakers are troubled with the possible negative implications for bias and fairness. There is a critical need for regulation due to the AI development which shows upon the alignment related to the landscape of regulation. KPMG (2023D) also presents, from their survey standing of people around the world representing countries who are leaders in AI activity, that 71% expect AI to be regulated. They also say that regulation demands transparency.

“There is a critical need for guardrails and legislation to deal with significant new risks regarding the appropriate and ethical use, development and distribution of AI.”
(KPMG, 2024B)

“There are policy implications related to enhancing algorithm transparency and accountability, that is, helping individuals better understand the technology, its processes, and its conclusions.”
(Deloitte, 2023B, p. 3)

According to Deloitte (2023B), the regulatory initiatives need to keep pace with the growing risks these technologies bring, but also that regulators increase the pressure on organizations to identify risks in relation to their AI systems. They also say that policymakers should not take away the potential of innovation through regulation. Furthermore, EY (2023E) presents that regulation is lagging behind due to the faster pace of the technology development.

“One of the top corporate challenges in the privacy era is keeping up with regulatory changes across many jurisdictions, but in the case of AI, development has far outpaced legislative action.”
(EY, 2023E, p. 3)

Especially in the US, AI is seen as a key to increasing the economic security and competitiveness, but also national security in the coming decades, according to Deloitte (2023B). As a result of this, there are proposals that relate to government-led investments or even public-private research partnerships. Deloitte (2023B) gives policy implications and special recommendations to the US government, highlighting three sections. Firstly, they suggest to directly fund AI innovation, whether through partnerships with universities or spending on pilot projects. Secondly, regulators need to create new incentives for the AI entrepreneurship ecosystem. Lastly, they need to provide the infrastructure for advanced AI development, such as through regional hubs or low-cost infrastructure.

Deloitte (2023B) proposes five essential components to contemplate as a result of policymakers requiring a proactive and flexible approach for AI regulation that is capable of navigating in this intricate landscape.

“Adaptive regulation: Shift from “regulate and forget” to a responsive, iterative approach.

Regulatory sandboxes: Prototype and test new approaches by creating sandboxes and accelerators.

Outcome-based regulation: Focus on results and performance rather than form.

Risk-weighted regulation: Move from one-size-fits-all regulation to a data-driven, segmented approach.

Collaborative regulation: Align regulation nationally and internationally by engaging a broader set of players across the ecosystem.”

(Deloitte, 2023B, p. 8)

From the regulatory framework and initiatives, challenges arise to the regulation of this transformative landscape of AI, both for policymakers but also businesses. KPMG (2024A) says that since the market advances, global regulators need to get the time to set these guidelines for AI development, which EY (2023E) agrees upon and says that regulation is processing slowly and that regulation needs time to adapt to new technologies. The majority of the obligations are anticipated to come into force by the beginning of 2026. According to Deloitte (2023B), it would be easier if there is one type of AI regulation, as a gold standard, which would make cross-border compliance significantly easier. As of now, the EU AI Act is a prime example.

“Major markets implement conflicting AI regulations that make it challenging for companies to comply”

(Deloitte, 2023B, p. 13)

“Changing regulatory requirements are the top challenge for large companies when considering adopting technology to support data governance, responsible AI use and cybersecurity”

(EY, 2023E, p. 4)

KPMG (2024A) notes however, that there are countries and regions that have developed further when it comes to regulation. Due to the requirements from different markets, the after-effects were different jurisdictional regulations. EY (2023E) states that there are many multinational organizations that would like to implement the strongest data protection regulations rigorously, but they are affected by jurisdictional conflicts. Organizations must determine the most defensible position while minimizing the transfer of data across one geography to another.

“While some markets prioritized aggressive regulations over the past few years, many did not. As a result, organizations were left with a decision to implement elevated governance, processes and controls responsively on a market-by-market basis or to treat emerging

regulations as a bellwether for things to come and invest in proactive, mature, and automated privacy and security programs.”
(KPMG, 2024A, p. 13)

According to EY (2023A), due to the transformative evolution that the technology has, it leaves governments to handle a continuing challenge of regulating against possible concerns that have not fully happened yet.

In summary, from the document analysis from the Big Four reports, the regulation of AI is expressed as complex due to the rapid technology advancements. Initiatives such as the EU AI Act aim to provide a regulatory framework with the aim to manage risks and foster innovation, with numerous challenges connected. Flexible and collaborative approaches are central for navigating this landscape. However, regulation often lags behind the AI technology, resulting in compliance challenges for businesses. Despite difficulties, proactive and flexible regulation is perceived as vital.

5. Discussion

5.1 Ethical considerations

The analysis of Big Four accounting firms' documents on AI illuminates several key themes that are central to the discussion of AI by these firms and expand our understanding of AI's implications in business and society.

Based on the findings from the analysis of Big Four accounting firms' documents on AI, it is clear that ethical considerations represent a central and pervasive theme in their discussion.

These reports collectively frame trust as a foundational element for successful AI adoption and deployment. Establishing trust is positioned as essential for organizations leveraging AI technologies, with a positive correlation between trust and AI acceptance. In line, Zdravković et al. (2022) argues that it is crucial to establish trust for AI widespread adoption and effective integration into various sectors. Moreover, Danielsson et al. (2022) say that building trust in AI involves ensuring that these systems are not only transparent but also fair, reliable, and safe.

The Big Four emphasize that fostering trust requires transparently demonstrating how AI is used, ensuring accountability for AI decisions, and implementing robust assurance mechanisms such as independent AI ethics reviews and regular system assessments. That is, accountability and transparency are framed as other fundamental aspects of responsible AI deployment advocated by the Big Four. This aligns with Munoko et al. (2020) who argues that accountability and transparency are crucial and fundamental elements within financial systems, which raises questions about the reliability and trustworthiness of AI-generated outputs. Lehner et al. (2022) says in accordance that the interpretability and explainability of AI-driven decisions is a concern, especially in critical financial scenarios where transparency and accountability are crucial.

The Big Four firms highlight the critical nature of responsible AI for ensuring ethical use, particularly in light of the emerging GenAI era, which poses unique risks due to its reliance on extensive underlying data. This aligns with Cao (2022) who argues that ethical considerations emerge in the deployment of AI in business processes, especially concerning the responsible use of AI in handling sensitive data. When businesses increasingly rely on AI systems to analyze big datasets, the ensurement of responsible use of these technologies becomes fundamental (Cao, 2022). The absence of clear accountability frameworks adds complexity to ethical AI deployment, reinforcing the need for clear policies and organizational structures to determine responsibility for AI outcomes.

5.2 Strategic Impacts of AI

Moreover, the findings from the document analysis of Big Four reports reveal information on the adoption and investment in AI. The findings indicate a strong trajectory towards AI implementation, with organizations that are already adopting AI, or are planning to do it in the near future, and with the investments in AI that are substantial and growing. The potential applications of AI span multiple industries, and this diversity underscores the extensive and

varied investment possibilities within AI across different sectors. The data reveals a strong consensus among the Big Four firms regarding the transformative impact of AI across industries, highlighting its role in improving predictions, optimizing products and services and fostering innovation. Borges et al. (2021) agrees on the transformative benefits, and adds the enhanced efficiency and accuracy in data analysis, resulting in a faster decision-making. But also, as Kureljusic and Karger (2023) says, that due to the predictive analytics given by AI systems, which enables better forecasting accuracy, companies can anticipate market trends.

Companies increasingly view AI as a pivotal driver for expansion and growth, recognizing that embracing technology is essential for remaining competitive in evolving markets. The Big Four firms highlight how technological progress accelerates innovation, leading to extraordinary economic outcomes over time. AI is identified as critical for the success of organizations in the coming years. Accordingly, Enholm et al. (2022) find that organizations are investing in AI systems to gain competitive advantages. Moreover, the projected growth in AI investments underscores the strategic importance that organizations are placing on leveraging AI capabilities for competitive advantage and operational excellence. Borges et al. (2021) says in accordance, that due to the dynamic adaptability of AI systems, it can change market conditions which ultimately provides competitive advantage. Furthermore, the findings from the analysis of Big Four reports frame the overarching theme that competitive advantage in today's society can be attained through technological advancement, particularly AI, which aligns with Borges et al. (2021). The Big Four firms emphasize the transformative potential of AI in disrupting markets and creating new business strategies and models, positioning organizations in a better position in the marketplace compared to competitors.

The Big Four reports frame AI not merely as a tool but as a transformative force, reshaping traditional tasks and workflows across various industries. For instance, the reports highlight AI's transformative capabilities in handling high-volume tasks. Borges et al. (2021) follows this by saying that large datasets can be processed by AI more effectively than traditional methods. Additionally, the adoption of AI is framed as a game-changer, with significant implications for various offices within organizations, which aligns with Davenport and Ronanki (2018) who says that AI can lead to significant savings in terms of labor and time. The discussion from the Big Four underscores AI's evolution from a technological innovation to a societal cornerstone, with far-reaching implications across diverse sectors beyond specialized industries. This aligns with academic literature emphasizing AI's transformative role in redefining work processes, fostering innovation, and reshaping societal dynamics (Aleksandrova et al., 2023). This also aligns with Petkov (2020) who says that it is possible to automate routine and time-intensive tasks, such as data processing, analysis and report creation, allowing financial professionals to allocate their time more strategically. This streamlines operations and reduces labor expenses associated with repetitive tasks, allowing organizations to optimize their workforce and allocate human resources to more value-added activities.

5.3 Practical Impacts of AI

Productivity and efficiency benefits of AI together with performance improvements and cost savings are benefits widely discussed by the Big Four firms in relation to AI. Productivity growth is framed as a key driver of economic progress and improvements in living standards, with AI positioned to significantly enhance worker productivity and unleash efficiency gains across various sectors. The reports by the Big Four firms align with Davenport and Ronanki (2018) who agree upon the improved productivity and significant cost reduction as a result of integrating AI. The reports highlight that productivity growth, defined as the ability to produce more with the same labor and capital inputs, is critical for long-term economic growth. According to the Big Four firms, AI-driven productivity is projected to provide substantial economic benefits, with estimates suggesting a boost to GDP and significant labor efficiency gains over the coming decade.

The Big Four firms stress the role of AI in reducing production costs, generating new designs at low marginal costs, and driving overall cost optimization across business functions. The ability of AI to enhance operations, forecast prices, and reduce process costs underscores its transformative impact on industry efficiency. Hasan (2022) agrees upon this by saying that the continuous learning capacity of AI systems can enhance the forecasting accuracy for businesses which ultimately improves forecasting strategies.

The findings emphasize the narratives on AI's potential to drive productivity growth, enhance efficiency, and deliver tangible economic benefits across industries. For instance, Vlad and Vlad (2021) argues about the fraud detection, handling unstructured financial data or even facilitating automated auditing in the context of accounting and finance. In accordance with this, Marotta and Au (2022) adds that AI systems can improve resource allocation within business processes and through leveraging machine learning algorithms, historical data patterns and market trends can be analyzed to optimize resource allocation strategies. This includes for instance allocation of financial assets, budgetary resources and workforce due to predictive analytics (Marotta & Au, 2022).

The Big Four firms further frame that a technology like AI is essential for businesses to thrive in a data-driven environment, serving as table stakes that mitigate risks and enable confident decision-making. Furthermore, demonstrating a balanced approach to risk and innovation is framed as instrumental in fostering trust and gaining a strategic edge over competitors. Marotta and Au (2022) agrees by saying that AI systems can process vast datasets and identify correlations to make more informed decisions regarding resource distribution, resulting in having more effective and targeted allocation of resources. These findings contribute to the ongoing academic discussion by shedding light on the strategic positioning of AI within business frameworks.

However, amidst the enthusiasm for AI, it is acknowledged that this technology is not without imperfections. The analysis of Big Four reports reveals a strong connection between AI and risk management, with AI playing a pivotal role in identifying and mitigating various risks that impact businesses across different domains. For instance, AI is framed as a powerful tool for detecting fraudulent behavior and enhancing security operations, leading to

significant reductions in manual effort and more efficient threat detection. In line with the Big Four firms, Aleksandrova et al. (2023) argue that AI systems analyze transaction patterns, detect anomalies, and flag potentially fraudulent activities more efficiently. These insights underscore the multifaceted opportunities offered by AI in addressing complex risk management challenges. The examples provided in the reports highlight the diverse applications of AI for risk management beyond conventional business settings. Li et al. (2021) explain the emergence of AI applications in risk management and compliance, pointing out the role of AI in addressing risk management challenges. These findings contribute to the ongoing academic discussion by elucidating AI's role in risk management across diverse business sectors.

In this context, the analysis of the Big Four reports put a lot of emphasis on the critical themes of cybersecurity and data privacy within the AI landscape. The reports consistently frame these themes as paramount challenges in AI adoption, highlighting the multifaceted risks associated with deploying AI technologies. There is a collective recognition of the need to implement robust cybersecurity measures to mitigate risks, particularly concerning data breaches and cyber threats. This is also highlighted by the academic literature, where Cao (2022) argues that the handling of confidential financial information necessitates robust safeguards to protect against unauthorized access, breaches, and adversarial attacks. The Big Four firms' findings underscore a positive correlation between AI implementation and cybersecurity risks, reflecting concerns that AI systems may increase vulnerabilities to cyber-attacks. To confirm this positive relationship, Aleksandrova et al. (2023) finds that the number of cybercrimes has significantly grown in the last few years. Moreover, the reports frame the importance of data privacy within the AI ecosystem, cautioning that AI could exacerbate data privacy risks by connecting disparate data sets and potentially breaching privacy controls. This underscores the need for stringent privacy protections and transparent data governance practices in AI development and deployment. Similarly, Benlian et al. (2018) identify data privacy and information security as potential inhibitors for AI adoption.

Furthermore, it is recognized that AI can also be leveraged by cyber-criminals, with malicious actors leveraging AI capabilities to orchestrate sophisticated cyber-attacks and deep fakes at scale. However, the reports also highlight the potential of AI to assist companies in detecting and defending against these cyber-attacks more effectively, showcasing AI's dual role as both a threat and a defense tool. In line, Cao et al. (2022) maintain that AI can bring several benefits to organizations, but also several challenges, with the risk of cyber-attacks being one of these. Polak et al. (2020) echo by saying that AI systems can serve as a tool for detecting and combating cyber-attacks. The Big Four narratives frame the necessity of proactive engagement with AI as a strategic imperative rather than a peripheral technological advancement. The reports advocate for a fundamental shift in approach to fully harness AI's potential, urging organizations to view AI as a driver of broader business transformation rather than a standalone tool. The Big Four firms emphasize the need for strategic roadmaps that prioritize impactful use cases, establish robust governance frameworks and embed responsible AI practices within broader business strategies. These findings frame the evolving landscape wherein AI is positioned as a critical

driver of organizational strategy and innovation, aligning with previous literature that emphasizes the transformative potential of AI across diverse sectors (Jain and Kulkarni, 2023). This holistic approach is framed as vital for long-term business success, societal trust, and sustainable innovation in the AI era. By embracing these strategies, organizations can effectively unlock the transformative potential of AI while mitigating its associated risks to achieve sustainable and responsible AI adoption.

In analyzing the reports from the Big Four accounting firms concerning AI, the concept of data quality is framed as an important component shaping the effectiveness and trustworthiness of AI. The discussion on data quality in the Big Four reports reveals a comprehensive understanding of the challenges associated with leveraging AI applications in business contexts. By addressing input quality, output reliability, and biases inherent in AI technologies, these reports underscore the pivotal role of data quality assurance in fostering responsible and impactful AI adoption across industries. In line, Kureljusic and Karger (2023) say that the quality of input data is important for AI applications as good training data and good input data directly affect the result of these applications.

Furthermore, the discussion extends to challenges associated with AI output quality. The Big Four firms raise concerns about AI-generated content, emphasizing potential inaccuracies or offensive material, especially within GenAI models. For instance, certain AI models pose unique challenges, such as producing incorrect answers or struggling with citations and math problems. The Big Four firms suggest human review processes as a solution to maintain quality and diversity in outputs. This emphasis on data quality resonates within the academic literature on AI with Jain and Kulkarni (2023) arguing that data quality issues are important to ensure the effectiveness of AI systems.

Moreover, governance mechanisms and compliance considerations are framed as important themes. The discussion on governance mechanisms emphasizes the necessity of establishing robust tools and methodologies to monitor and evaluate AI systems, accentuating the importance for organizations to conduct meticulous assessments of data requirements and data privacy. The reports frame the critical role of governance mechanisms in both the deployment and management of AI technologies, advocating for the implementation of clear governance structures that address ethical, legal, and operational aspects of AI deployment. The Big Four firms stress the implementation of governance mechanisms when integrating AI into operational frameworks, emphasizing the need for effective governance to ensure confidence in AI applications. Lehner et al. (2022) suggest that organizations need to implement governance mechanisms to monitor and assess the responsible use of AI systems to prevent the occurrence of risks and increase the trust on AI. The significance of governance is further reinforced, underscoring the critical role of tools and methods for monitoring and testing AI to address associated challenges effectively. Notably, poor governance mechanisms are framed as potentially increasing AI risks and creating new threats. In line with the Big Four firms' findings, Enholm et al. (2022) confirm that risks and negative consequences of AI systems can occur in the absence of governance mechanisms.

In parallel, compliance is framed as another significant theme within the discussion on AI. The Big Four extensively cover compliance issues, emphasizing the necessity of aligning AI initiatives with data protection regulations, ethical guidelines, and industry-specific norms. The Big Four firms frame the importance of compliance with strict standards concerning risk management, data quality, transparency, human oversight, and robustness. This is also expressed by Zdravković et al. (2022), who argue that AI systems can assist in risk management and compliance issues. Additionally, the reports highlight the need for compliance offices to adapt to emerging regulatory standards to effectively manage AI-related risks. In line with the Big Four firms, Stoykova and Shakev (2023) argue that AI systems can support compliance to regulation by detecting anomalies in real time. These themes underscore the imperative for organizations to implement comprehensive governance structures and align AI initiatives with evolving regulatory landscapes to mitigate risks and foster responsible AI deployment across industries.

5.4 Employees-AI interaction

Moreover, a nuanced understanding emerges regarding the evolving interaction between employees and AI technologies, shedding light on key aspects and perspectives on how AI is reshaping the workforce and job roles. Firstly, the reports frame the transformative impact of AI adoption on job functions and the overall workforce experience. It emerges that a significant proportion of the workforce will witness changes in their job functions due to the integration of AI tools. The Big Four firms particularly emphasize a human-centered approach to AI, positioning it as a means to augment human capabilities and enhance the workforce experience, rather than as a replacement for human labor. The reports stress the critical importance of human oversight and control over AI systems to ensure accuracy, fairness, and ethical decision-making. They recognize that while AI can automate tasks, human judgment remains indispensable in overseeing AI outputs and addressing its limitations. The same opinion is expressed by Raish and Krakowski (2021) who argue that employees still need their intuition and judgment to evaluate the output of AI systems.

Furthermore, there is a consistent emphasis across the reports on AI's role in enhancing efficiency by automating routine tasks, liberating human resources from repetitive activities and allowing employees to focus on strategic and higher-value tasks. This is in line with Davenport and Ronanki (2018) findings, which indicate that the automation of routine and time-consuming tasks, such as data processing, analysis, and report generation, allows employees to allocate their time more strategically.

In response to the evolving landscape, there is a strong advocacy for workforce development and upskilling initiatives to equip employees with the necessary competencies to thrive in an AI-driven economy. The reports reveal significant skill gaps and a lack of understanding among employees regarding AI technologies. AI is seen as a catalyst for the evolution of job roles, necessitating the acquisition of new skills and competencies. Accordingly, Enholm et al. (2022) find that it is important for employees to comprehend the purpose of AI, the functions it will perform, and the ways in which it will transform their roles and responsibilities within the organization.

The Big Four firms further frame the importance of educating workers on how to effectively use AI, emphasizing that investments in training are essential not only to bridge existing skill gaps but also to attract and retain specialized talents capable of leveraging AI technologies effectively. Consequently, there is a call from the Big Four firms for substantial investments in employees training programs to bridge these gaps and foster a culture of continuous learning. However, Lehner et al. (2022) argue that the initial investment required in training and talent acquisition represents one of the primary challenges for the adoption of AI systems. Therefore, companies willing to adopt AI need to invest in training programs according to the Big Four firms, but to do so the academic literature evidences that a substantial investment is required, which represents an obstacle for organizations. The analysis of Big Four reports underscores a shift in the discourse surrounding AI, moving away from the narrative of AI as a threat to jobs towards a more nuanced understanding of AI's potential to enhance workforce capabilities and drive innovation. These findings frame the importance of human-centric AI strategies and the role of continuous learning in shaping the future of work in the AI era.

5.5 Regulatory Landscape and Initiatives

Therefore, regulatory issues emerge as another theme framed by the Big Four firms, highlighting the complexity and challenges associated with governing rapidly advancing technologies, which Kaal and Vermeulen (2017) agrees upon by saying that disruptive innovation is always challenging for regulation, mainly because of their reactive nature. Regulatory frameworks linked to AI, such as the EU AI Act, underscore the global effort to address AI's transformative impact. The EU AI Act, in particular, represents a leading attempt to enact horizontal regulation of AI, aiming to foster adoption while mitigating risks and harmonizing the EU market for AI. Mökander et al. (2022) adds that the EU AI Act can also serve as a reference point in larger conversations.

The reports emphasize the need for flexible and harmonized regulation across jurisdictions to manage the transformative impact of AI effectively. Smuha (2021) says related to this that a regulatory framework equipped to effectively harmonize these requirements and authorize legal clarity for the stakeholders, has potential to not only foster trust in the technology, but also streamlining its adoption which ultimately can enhance the competitive advantage of nations. Despite regulatory progress, the pace of AI development poses ongoing challenges for policymakers and businesses alike. The Big Four firms point out that policymakers are grappling with risks and ethical implications, stressing the need for adaptive and collaborative regulatory approaches to navigate this intricate landscape. Caron and Gupta (2020) agrees on the challenges of regulating AI due to the ethical considerations that come along. De Almeida et al. (2021) argues that since ethical considerations and human behavior are heavily related, regulatory frameworks must consider that. Black (2002) also emphasizes that setting regulation and standards is a constant battle to reach desired results, especially in areas that involve ethical considerations when applied in practice.

Furthermore, regulatory initiatives are framed as essential for addressing privacy concerns, AI biases, and governance issues associated with AI deployment, which Smuha (2021) also

emphasizes on. The reports highlight ongoing efforts to enhance regulatory frameworks and offer recommendations for policymakers. The Big Four firms propose adaptive regulation, regulatory sandboxes, outcome-based regulation, risk-weighted regulation, and collaborative regulation as essential components of a proactive and flexible approach to AI regulation. Larsson (2020) suggests related to this to go from principles-based to process-oriented AI governance due to the gap between ethical guidelines and laws for instance. Hildebrandt (2018) argues, however, that there are more ways of regulating society and alternative approaches to shaping human behavior outside of the law which also can be used.

The analysis of Big Four reports frames the critical importance of regulatory initiatives in managing the transformative impact of AI. Regulation appears to be the most appropriate way to tackle these challenges of AI (Smuha, 2021). These findings contribute to the academic discussion on AI regulation and governance, emphasizing the imperative for proactive and flexible approaches from regulators to navigate the transformative AI landscape responsibly.

In summary, the analysis of the Big Four accounting firms documents on AI reveals several key themes central to the discussion of AI's implications in business and society. Ethical considerations, particularly the establishment of trust, are framed as essential for AI adoption, emphasizing the importance of transparency, accountability, and assurance mechanisms. Furthermore, investments in AI are growing, with AI framed as a transformative force across industries, enhancing predictions, optimizing products and services, and fostering innovation. Additionally, AI is framed as important for competitive advantage and operational excellence, driving productivity, efficiency, and economic growth.

The Big Four also stress the role of AI in risk management, especially in cybersecurity and data privacy, while framing AI as both a threat and a defense tool. Data quality and governance mechanisms are framed by the Big Four as important for effective and trustworthy AI deployment, with a strong emphasis on compliance with regulations and ethical guidelines. Moreover, the reports frame the evolving workforce dynamics, advocating for a human-centered approach to AI that augments human capabilities. There is a call for workforce development and upskilling initiatives to provide employees with the necessary skills to thrive in an AI-driven economy.

Lastly, the Big Four accounting firms frame the complexity and challenges of regulating advancing AI technologies, highlighting the EU AI Act as a leading example of efforts to foster adoption while mitigating risks. They emphasize the need for flexible and harmonized regulations across jurisdictions to effectively manage AI's transformative impact, suggesting adaptive, outcome-based, and collaborative regulatory approaches. Overall, the findings from the Big Four firms frame AI as a transformative technology with significant implications for emphasizing the need for ethical AI adoption, business strategies, risk management, workforce development, and regulatory compliance.

6. Conclusion

6.1 Themes identification

The purpose of this study is to analyze how the Big Four accounting firms frame the discussion about AI in their documents. By examining key themes and the framing of these themes, this research aims to illuminate the narratives these influential firms are constructing around AI and its implications for organizations and society. The first research question object of this study is: *“What are the main themes discussed by the Big Four accounting firms in their AI-related documents?”*. Our analysis indicates the presence of several key themes in the discussion of AI from the Big Four firms. By conducting a thematic analysis, we identify 12 key themes: Ethical Considerations; Adoption and Investments; Competitive Advantage; Transformative Role; Innovation; Productivity and Efficiency; Benefits for Risk Management; Cybersecurity and Data Privacy; Data Quality; Governance and Compliance; Employees-AI Interaction; Regulatory Landscape and Initiatives. These themes reveal the multifaceted and comprehensive discussion surrounding AI within these firms.

6.2 Framing of themes

The second research question object of this study is: *“How are the Big Four accounting firms framing the discussion about these themes?”*. This question directly builds on the themes identified above and aims to understand how the Big Four firms are framing these themes in their documents.

Firstly, the Big Four firms frame the ethical considerations of AI by emphasizing the necessity of responsible AI practices. Their discussions stress the principles of transparency, accountability, and trust. They highlight the importance of ensuring the ethical use of AI, particularly in light of GenAI's potential risks. The firms advocate for clear accountability frameworks and robust assurance mechanisms to foster trust and acceptance of AI technologies.

Secondly, the reports highlight substantial adoption and investment in AI, noting the technology's strategic importance for competitive advantage and operational excellence across industries. AI is portrayed not merely as a tool but as a transformative force reshaping traditional tasks and workflows. They emphasize the increasing trajectory of AI implementation, with substantial and growing investments in the technology.

Furthermore, the discussion on competitive advantage is framed around AI's transformative potential in disrupting markets and creating new business models. The Big Four firms emphasize that leveraging AI is essential for engaging customers, securing loyalty, and driving significant returns. They present AI as a pivotal driver for business expansion and stress the need for businesses to adopt AI to thrive in a data-driven environment.

The transformative role of AI is highlighted by framing it as a fundamental force reshaping industries and business processes. The Big Four firms emphasize AI's ability to improve predictions, optimize products and services, and foster innovation. They position AI not

merely as a tool but as a cornerstone of modern business, capable of transforming traditional tasks and workflows across various sectors.

Innovation is framed as a benefit of AI, with the Big Four highlighting how AI accelerates technological progress and drives extraordinary economic outcomes. The firms discuss AI's potential to enhance research and development, automate routine tasks, and enable employees to focus on advanced cognitive activities. They stress the importance of adopting AI to foster innovation and maintain a competitive edge.

Moreover, productivity and efficiency benefits are extensively covered, with AI positioned as a key driver of economic progress through enhanced worker productivity and operational optimization. The Big Four firms underscore AI's potential to automate labor-intensive tasks, streamline processes, and optimize production schedules. They highlight AI's role in reducing production costs and driving overall cost optimization across various business functions.

In discussing the benefits of AI for risk management, the Big Four firms frame AI as a powerful tool for identifying and mitigating various business risks. They emphasize AI's capabilities in fraud detection, security enhancement, and regulatory compliance. The reports highlight AI's dual role in both detecting and defending against cyber threats, showcasing its importance in managing complex risk landscapes.

Cybersecurity and data privacy are framed as paramount challenges in AI adoption. The Big Four firms emphasize the need for robust cybersecurity measures to mitigate risks associated with AI deployment. They discuss the potential for AI to exacerbate data privacy risks and stress the importance of implementing stringent privacy protections and transparent data governance practices.

The discussion on data quality is framed around its critical impact on AI efficiency and reliability. The Big Four firms highlight the necessity of diverse, accurate, and complete datasets for training AI models. They address challenges related to AI output quality, including potential inaccuracies and biases, and advocate for human review processes to ensure quality and diversity in AI-generated content.

Governance and compliance are framed as essential components of responsible AI deployment. The Big Four emphasize the need for robust governance mechanisms to monitor and evaluate AI systems. They advocate for clear governance structures addressing ethical, legal, and operational aspects of AI, and stress the importance of aligning AI initiatives with evolving regulatory standards to mitigate risks.

Furthermore, the evolving interaction between employees and AI technologies reveals a nuanced understanding of AI's role in reshaping job functions. The Big Four firms emphasize a human-centered approach to AI, positioning it as a means to augment human capabilities rather than replace human labor. They advocate for workforce development and upskilling initiatives to equip employees with the necessary competencies to thrive in an AI-driven economy. The reports highlight the importance of human oversight and control to ensure ethical and fair AI decision-making.

Lastly, the regulatory landscape is framed as a complex and evolving challenge in AI adoption. The Big Four firms discuss the global efforts to address AI's transformative impact through flexible and harmonized regulation. They highlight the need for adaptive and collaborative regulatory approaches to navigate the intricate landscape of AI governance, emphasizing the importance of regulatory initiatives in managing AI-related risks.

6.3 Contribution to literature

This thesis contributes to the literature on how AI is being framed by the Big Four accounting firms by offering new insights into the recognized themes through a document analysis. By conducting a document analysis, this research addresses the need to learn more about the discussion of AI and its themes as framed by the Big Four firms. The technology of AI is still in an early stage of development and it will most likely evolve in the future. Organizations find themselves in a climate of uncertainty as there are not clear guidelines to assist them in the implementation of AI. Therefore, this study contributes to this need by providing some clarity about the discussion of AI as framed by the Big Four firms.

Moreover, by identifying and analyzing key themes, this research delineates how the Big Four firms articulate the multifaceted implications of AI. This thematic analysis uncovers how these firms position AI as a transformative force in business, emphasizing its potential to drive innovation, enhance productivity, and provide a competitive edge, while also highlighting the associated ethical, regulatory, and operational challenges.

In conclusion, this study enhances our understanding of the Big Four's role in framing the AI discussion, providing insights into the themes and narrative strategies that shape the contemporary business landscape's understanding and adoption of AI. It also sets the stage for future research to explore the impact of these framing strategies on organizational behavior and regulatory development, thereby advancing both scholarly inquiry and professional practice in the field of AI.

6.4 Future research

While this study has been providing significant insights into how AI is being framed by the Big Four, numerous warrant further investigation. First of all, AI is still in its early stage and will most likely evolve significantly. Therefore, further research in a transformative world of AI has a lot to further study. For instance, researchers can investigate how AI can help financial forecasting or other specific implementations of AI. Secondly, further research could expand on our study with the presented themes, but shift the focus towards the perspectives of organizations. Thirdly, by conducting a different method, other themes could have been presented which were not found by applying the method of a document analysis. Lastly, researchers can focus their attention on empirical studies. For instance, providing empirical evidence from organizations that have already implemented AI can benefit other organizations, as well as regulators. Addressing these areas would contribute to the academic literature even further, providing a deeper understanding on the role of the Big Four accounting firms but also the impact of AI.

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Appendix A

List of all 66 documents:

Deloitte (17):

A practical approach to building trust in Artificial Intelligence	2023
AI for social good	2023
AI for work relationships may be a great untapped opportunity	2022
AI study: Over 60 per cent use Artificial Intelligence at work	2023
AI success factor: Adjust business processes to take advantage of AI	2023
AI success factor: Build responsible and ethical principles into AI development	2023
Artificial Intelligence and Rulemaking	2023
Digital ethics and banking: A strong AI strategy starts with customer trust	2023
Ensuring a human-centered approach to AI	2023
EU Artificial Intelligence Act	2022
Realize the benefits of AI and ML	2021
Security and compliance in 5G and AI-powered edge networks	2022
Surveillance and Predictive Policing Through AI	2024
Technology is shaping the future of underwriting	2023
Ten ways AI can be used for good	2021
The implications of generative AI in Finance	2023
What rise in AI means for jobs, workers, organizations	2022

EY (25):

Adapting the UK pro innovation approach to AI regulation	2023
AI and Web3 mix could reshape business models	2024
Building the foundations for trusted artificial intelligence in the UK	2023
Catalyze economic growth through capital investment in GenAI	2024
Five “no regret” actions for TMT companies to unlock generative AI’s potential	2023
Five generative AI initiatives leaders should pursue now	2023
Five priorities for harnessing the power of GenAI in banking	2023
Five priorities for winning with GenAI in wealth and asset management	2024
Frameworks for artificial intelligence in South Australia	2023
G7 AI Principles and Code of Conduct	2023
Harness the productivity potential of GenAI	2024
How can AI help us accelerate the pace of change the world needs	2023
How Europe’s FS leaders are approaching generative AI adoption	2023
How GenAI changes the way CPG and retail operate — and consumers too	2024
How GenAI is reshaping private equity investment strategy	2024
How generative AI might help tax functions tackle challenges	2023
How supply chains benefit from using generative AI	2024
How to balance opportunity and risk in adopting disruptive technologies	2023
How to build a foundation in AI to accelerate health transformation	2024
How to confidently use AI to create value	2024
How to create an AI strategy during peak AI	2023
How your organization can have confidence in the opportunities AI brings	2024
Safe and responsible AI in Australia	2023

The AI moment is now: how businesses can ready their workforce	2024
Why enabling AI's full value requires top-down thinking	2023

KPMG (11):

Cybersecurity considerations 2024	2024
Decoding the EU Artificial Intelligence Act	2024
Diverging regulatory approaches for AI	2023
Empowering security	2023
Generative AI Survey Report 2023	2023
Global Tech Report 2023	2023
Maintaining cyber vigilance and staying resilient	2023
Pulse of Fintech: Top trends for 2024	2024
Trust in AI - Global insights 2023	2023
Trust in Artificial intelligence 2023	2023
Unlocking the future with Generative AI	2024

PwC (13):

2024 AI Business Predictions	2024
AI och Business Technology	2023
Do you have an "early days" generative AI strategy?	2023
For GenAI-enabled threats, fight fire with fire	2023
From principles to practice: Responsible AI in action	2024
Gen AI is a tool for growth, not just efficiency	2024
Investors on AI: Speed up, but drive carefully	2023
It's time to get excited about boring AI	2021
Managing the risks of generative AI	2023
Meet modern compliance: Using AI and data to manage business risk better	2021
Seven crucial actions for managing AI risks	2023
What is responsible AI and how can it help harness trusted generative AI?	2023
Who's afraid of AI? Most employees aren't	2023

Appendix B

Words lists for each category:

Benefits = benefit, beneficial, advantage, advantageous, potential, gain, profit, perk, enhancement, improvement, strategy, competitive, efficiency, effective, effectiveness, innovation, value-added, value, productivity, saving, optimization, satisfaction, flexibility, progress, revenue, success, successfully, edge, upside, breakthrough, prosperity, favorable, merit, favor, privilege, reward, bonus, usefulness.

Risks and Challenges = risk, challenge, uncertainty, danger, obstacle, difficult, difficulty, adversity, pitfall, complexity, disruption, hazard, hurdle, impediment, downside, complication, barrier, setback, obstruction, drawback, threat, peril, trouble, limitation, cybersecurity, privacy, security, firewall, vulnerability, cyberattack, breach, data, intrusion, exploitation, malware, phishing, encryption, authentication, attack, malicious, cyber, defense.

Employees-AI interaction = collaboration, automation, adaptation, adaptability, learning, learn, skill, augmentation, empowerment, trust, employee, human, resistance, training, cooperation, coexistence, synergy, resilience, work, people, interaction, acceptance.

Ethical Considerations = integrity, accountability, value, transparency, ethical, responsibility, responsible, trustworthiness, bias, discrimination, morality, fairness, social, moral, ethicality, impartiality.

Regulation = regulation, governance, directive, compliance, policy, standardization, rule, legislation, enforcement, standard, norm, authority, legal, control, requirement, act, law, parliament, council, regulatory.

ChatGPT prompt:

We are writing a master thesis on how the Big Four accounting firms are discussing AI. The purpose of our study is to conduct a document analysis study on reports about AI redacted by the Big Four. The goal is to find themes, what and how they are talking about AI.

In the selection process of the relevant documents for our master thesis, we developed a script in Python that automatically analyzes the PDFs. Precisely, this script reads the pdfs, tokenizes and cleans the text, and counts specific words within these pdfs. These specific words consist of six different word lists inherent to six different main themes: Benefits, Risks and Challenges, Employees-AI Interaction, Ethical Considerations, and Regulation. The script then returns the percentage of coverage of each theme for each document. To ensure that the script works in the most accurate way the word lists developed needs to be the most accurate and representative of the main theme as possible. Additionally, each word can appear in only one category and only single words in the singular form are used. Can you help us expand these lists with as many words as you can come up with? So far, we developed the following lists: