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How does Artificial Intelligence Adoption Differ Across the Consulting, Banking and Human Resources Sectors?

The Case of Artificial Intelligence in KPMG Portugal

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Abstract

This paper provides a comparative analysis of Artificial Intelligence (AI) adoption within the industries of Consulting, Banking, and Human Resources. Using the authors' professional experiences in Accenture, KPMG, Banco de Portugal, and Mercer, this paper examines the adoption and impacts of AI in these specific companies. It explores how these entities leverage AI to enhance services, detailing individual contributions and collaborative innovations. The research also assesses the impact on efficiency and client engagement and discusses the strategic, ethical, and operational challenges encountered.

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Keywords: Artificial Intelligence, Cross-Industry Analysis, Strategic AI Integration, AI Adoption Challenges.

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Group Part

Introduction

The utilisation of computer systems to carry out tasks that typically require human understanding is commonly referred to as Artificial Intelligence (AI), having been around for over 60 years (Deloitte 2023). However, it had a remarkable boost in recent years, placing itself at the forefront of disruptive technologies with significant consequences for businesses (Akerkar 2019).

With a market size projected to reach $241.80 billion in 2023 and a compound annual growth rate of 17.3% each upcoming year until 2030 (Statista, n.d.), it is undeniable that AI is becoming more and more widespread in business settings ("Review of Using Technologies of Artificial Intelligence in Companies - ProQuest," n.d.).

According to a recent Price Waterhouse Cooper (PwC) report, Artificial Intelligence will contribute more than USD 15 trillion to the world economy by 2030 and may have a 26% positive impact on local economies.

AI is viewed as a powerful instrument for automating operations, improving decision-making, and enhancing productivity (Weitzman 2022). As a result, organisations from a variety of industries and functions are utilising AI's capabilities in their day-to-day activities. In light of these trends, companies must keep up with current developments and remain at the forefront of technical innovation to remain competitive (Weitzman 2022). The choice to incorporate AI in their strategic vision is no longer seen as an option, but instead as a necessity for long-term growth and survival.

Motivation

The driving force for this thesis arises from a distinctive advantage point that we, the authors, collectively offer. Following the completion of our Master's degrees, our professional paths

have led us into a variety of industry sectors, each of which is distinguished by its own set of unique challenges and characteristics. We are currently, or were recently, engaged in pivotal roles at esteemed organisations such as Accenture, KPMG, Banco de Portugal, and Mercer.

As AI rapidly alters the business landscape, it becomes imperative for companies to not only adeptly integrate new technologies into their daily operations but also grasp the ethical and societal implications, to minimise risks (Talagala 2022). In this sense, our ability to draw from a broad spectrum of perspectives can provide a more comprehensive analysis of how AI is being implemented and how it can be improved in distinct contexts such as Consulting, Banking and Human Resources.

This multifaceted understanding has the potential to not only improve the dialogue among companies who are integrating AI into their operations but also foster the transfer of innovations and valuable insights gained from addressing common challenges and gaps.

Problem Statement

Companies must successfully integrate AI into their businesses to stay competitive, increase efficiency, and foster innovation. Despite the potential advantages that adopting AI may have, it is critical to tackle the difficulties to increase the likelihood of successfully implementing AI. With this in mind, this paper will address industry-specific challenges and gaps since the uniqueness of AI's integration inside each sector may present different challenges. Banking, for instance, may face strict regulatory constraints, while Consulting may struggle not only with adapting AI solutions to its client portfolio but also with how to increase internal efficiency, and HR industry challenges may focus more on talent management and privacy concerns.

Recognising those differences and tackling industry-specific difficulties is not just a desired element in this paper but an essential prerequisite for the effective study of AI technology among different sectors.

Another challenge that will be addressed in this study is the limited comparative analysis between companies. While there is an increasing quantity of literature on AI adoption in individual industries, there is an absence of research that gives a comparative study across companies and sectors. This lack of cross-industry analysis limits the ability to find common patterns, best practices, and useful lessons that might extend beyond individual industries.

Without this broader perspective, decision-makers can miss out on opportunities that may have the potential to dramatically improve AI adoption on a global scale. Moreover, an in-depth comparison analysis would not only assist in identifying general issues that organisations encounter when using AI, but it would also allow for a more effective allocation of resources and knowledge sharing, enabling industries to learn from one another's successes and failures.

Objectives

To fully understand the transformational potential of AI inside these different industries, this study is guided by several interconnected goals with the final objective of answering the research question “How Does Artificial Intelligence Adoption Differ Across The Consulting, Banking And Human Resources Sectors?”.

This paper aims to explore the current state of corporate use of AI across the analysed companies. The possibility of accessing information first-hand through our professional experience provides the authors with the ability to share a real-time view of AI maturity levels in the Consulting, Banking, and HR industries. Moreover, new trends will be analysed as well as the range and breadth of Artificial Intelligence use. As a result, an investigation and documentation about the AI adoption, impact, gaps, and challenges that these companies face will be conducted.

Beyond that, this thesis aims to undertake a complete cross-industry analysis of organisational strategies, challenges, and opportunities, and provide a comparative analysis of how AI is used within the featured firms. By bridging the gap between these industries, we hope to facilitate

the exchange of valuable insights and, ultimately, foster a collaborative mindset as a way to enhance the adoption and efficacy of sound AI practices.

Literature Review: Introduction to Artificial Intelligence in Business

AI's History and Evolution

Theoretically, computers and artificial intelligence were made possible by the notion of a "universal machine," which was initially put forth by British mathematician and computer scientist Alan Turing in the middle of the 20th century. Later in 1950, Turing released the "Computing Machinery and Intelligence" paper where he presented the famous Turing Test, a technique for assessing how well machines can exhibit intelligent behaviour indistinguishable from that of a human. In 1956, John McCarthy organised the Dartmouth Workshop, which is regarded as the inception of AI as a recognised academic field. This event popularised the term "Artificial Intelligence" and laid the foundation for research on AI (Rajaraman 2014).

Despite the initial enthusiasm, the 1970s and 1980s witnessed the "AI winter", characterised by slower growth and funding agencies that were uninterested in supporting AI initiatives (Drew 1973). During this period, AI was primarily concerned with expert systems, which were computer programs developed to replicate human expertise in specific domains. Moreover, in 1980, Japan's Ministry of International Trade launched the Fifth Generation Computer Systems project aiming to develop advanced AI and computer technologies. However, the project's goals were overly ambitious, contributing to another AI funding decline (Pollack 1992).

As a result of advancements in machine learning and the availability of large datasets, artificial intelligence research experienced a period of growth in the 21st century. An increasing number of examples showing the power of AI began to emerge: In 2011, IBM's Watson demonstrated remarkable AI capabilities by defeating human champions in the quiz show "Jeopardy!" (Sheikh, Prins, and Schrijvers 2023). In 2012, a Deep Learning model won the ImageNet Large Scale Visual Recognition Challenge, revolutionising computer vision. Concurrently, virtual

assistants driven by AI, like Google Assistant and Apple's Siri, became widely adopted. In 2016, DeepMind's AlphaGo beat Lee Sedol, the world Go champion (The Guardian 2016). Since then, AI has continued to thrive in a variety of fields, from autonomous vehicles to healthcare, reshaping industries. More recently, in 2018, OpenAI introduced GPT (Generative Pre-trained Transformer), accelerating the development of future LLMs (Forbes 2023). In November of 2022, OpenAI launched ChatGPT to equip a chat-based UI (User Interface) to its GPT-3.5 LLM (New York Times 2022). In the past, AI relied heavily on human commands, and workers were required to participate in all stages. However, humans are becoming less and less needed as machines can learn on their own based on trial and error and past data.

Basic Concepts of AI

Machine Learning (ML) is the science of training a computer or a system to perform certain tasks without the need for explicit instructions to do so (Amazon 2023), hence it is considered a part of Artificial Intelligence (McKinsey & Company 2023). ML algorithms are used by computer systems to evaluate massive amounts of data, spot data patterns, and forecast precise results for unusual or new circumstances (Pramila P. Shinde, Seema Shah, 2021). ML is considered the biggest segment of the AI market, encompassing the majority of AI software and projects ("Topic: Machine Learning" 2023). The primary goal of ML is to develop learning algorithms capable of building models by being fed data based on past observations ("Machine Learning," n.d.). There are two primary techniques used in ML, each of which contains a multitude of algorithms designed for distinct purposes and applications.

Supervised learning trains a model to predict future outputs based on example input-output pairs, called labelled training data. The computer uses these examples to figure out a rule or pattern, which it subsequently applies when making predictions or classifications on the test dataset (Mahesh 2019). Classification, one of the main branches of supervised learning, consists of determining one or more categories to which a new observation can be assigned

(Schneider and Xhafa 2022). Spam detection illustrates a supervised ML model, given that emails or messages are categorised as either spam or non-spam.

Regression, on the other hand, is the process of predicting a continuous variable (dependent variable) as a function of independent variables (Gallo 2022). It is used in several fields, including finance, for instance, to project a company's future cash flows by using historical data from past financial statements and industry-wide indicators (Harvard Business School 2021).

Unsupervised learning takes a different approach, relying on unlabelled data to autonomously discover the underlying structure and patterns in the dataset. Unlike supervised learning, where models are trained to predict specific outputs, unsupervised learning methods operate without prior knowledge of target values – The ML system highlights distinctive aspects within the dataset, allowing the data itself to guide the discovery process (Zhou, Song, and Sundmacher 2019) (Delua 2021). Typical methods include clustering, which is the process of grouping objects according to similarities or differences (Madhulatha 2012) by using distance measures (Data Mining and Knowledge Discovery Handbook 2005). Association rules, another unsupervised learning approach, find underlying relationships between variables. When applied to market basket analysis, it reveals consumer purchasing patterns by identifying frequently purchased item sets, intending to assist companies in their business decisions (Teng 2011) (Subasi 2020). Dimensionality reduction is another method often applied in the analysis of high-dimensional data, like images or texts, to reduce input size and lower data processing time, while preserving the integrity of the original dataset (Bouchefry and De Souza 2020) (Schneider and Xhafa 2022).

One of the most prominent applications of these methods is Computer Vision, the second most adopted AI capability in 2022 (McKinsey 2022), which enables systems to extract insights from images or videos, automating tasks that replicate human visual perception and

interpretation (IBM n.d.). It is widely used in organising content on social media platforms by identifying individuals and objects and structuring them in an organised manner. It also plays a crucial role in autonomous vehicles for real-time object recognition (Microsoft n.d.). As of 2022, approximately 34% of companies have incorporated Computer Vision into their products or business processes, making it the second most adopted AI capability after robot process automation at 39% (McKinsey 2022).

Deep Learning, a subfield of Machine Learning can be applied in both supervised and unsupervised learning scenarios. It employs algorithmic structures called neural networks that are inspired by the human brain (Microsoft 2023). DL is often seen as an ML advanced technique, since traditional ML requires significant human interaction, while DL removes the need for humans to be present in each step (Amazon 2023).

Businesses integrate ML into their essential procedures for several strategic reasons. It can increase performance outcomes and boost a company's standing in the marketplace. Discovering trends and correlations, tailoring consumer engagement, and eventually boosting a business's revenue and growth are just a few of the advantages (Deloitte 2023). Businesses may use the data insights produced by machine learning to recognise, understand, and communicate with consumers more effectively. Data analytics powered by ML can also enhance efforts at customer segmentation to identify the most lucrative customers.

The companies that currently have data analytics capabilities benefit the most from ML in terms of gaining a competitive advantage. Businesses that employ data-driven decision-making processes outperform rivals with regard to productivity and profitability by 5% and 6%, respectively (Deloitte 2023).

Additionally, the subfield of Artificial Intelligence known as natural language processing (NLP) makes it possible for computers to comprehend, generate, and manipulate human language (Google Cloud 2023). Using natural language text or speech, NLP can query the data,

which helps improve search, automate routine tasks, analyse, and organise large documents, or provide insightful market findings (Oracle 2023).

Generative AI is another type of AI, which relies on NLP and Deep Learning to generate original content similar to its trained data. This new wave of text-based ML models is built upon a technique called self-supervised learning. In this method, the model is exposed to an extensive volume of text data, enabling it to develop predictive abilities. In this way, Generative AI allows increased employee productivity, which in turn leads to better allocated time and resources for clients (Brynjolfsson, Lindsey, and Raymond 2023). McKinsey's Global Survey 2023 concluded that 40% of organisations expressed their intention to increase their overall AI investments because of advances in Gen AI. This reflects a growing recognition of Gen AI's potential to catalyse transformative changes across industries.

These ML models, according to Deloitte's Report on Business Impacts of Machine Learning, are the heart of AI capabilities. This report expects the global market revenue for ML as a service to grow to US$ 20 billion by 2025, which is an important finding for this paper since it translates the increased importance in both the short and long-term of investing in AI in the studied companies. However, by its very nature, ML demands large volumes of data to train models, which involves a huge commitment of both time and resources. Finding the right algorithms and creating a working model take time, and it may take several iterations to produce a useful outcome.

Applications of AI in Business

Machine Learning and Artificial Intelligence have emerged as powerful technologies with the potential to revolutionise a variety of business operations aspects. AI's versatility has been particularly evident in the business world, where it may be leveraged in various domains which will be highlighted throughout this chapter.

AI in Marketing: Consumer Analytics

AI Marketing is the act of delivering customer insights and automating crucial marketing decisions utilising AI capabilities such as data collecting, data-driven analysis, natural language processing, and Machine Learning (OECD 2021). Today, more than ever, AI technologies are being used to create content, enhance customer experiences, and provide more accurate results. Organisations must fully investigate the many AI marketing applications available and see how other companies are utilising them before selecting an AI tool (IBM 2023).

Customer segmentation and targeting are critical phases in the market analysis as they help organisations identify and reach their most valued consumers (Deloitte 2023). Without AI, segmentation can be quite expensive due to the need to gather a sizable consumer database from numerous locations (Huang 2020). AI can be used to optimise customer targeting by using data-driven algorithms to discover and create market segments, resulting in more effective marketing campaigns.

Within segmentation, AI can assist in creating not only the market but also psychographic segments. Psychographics are indicators of a person's preferences, attitudes, and beliefs (Suman 2019). When paired with demographic information, psychographic information can provide companies with a nearly comprehensive image of the persona and aid in the selection of products that will appeal to this persona. Digital markers for illustrating a person's personality could include past internet activity, browsing behaviour, or past purchase history (Hult International Business School 2023). This data can be used in the marketing strategy, allowing firms to align their marketing mix with the values of their customers.

Overall, employing AI for consumer segmentation and targeting benefits businesses in a variety of ways, including increased competitive advantage and innovation, customer comprehension and contentment, and marketing efficiency. Hence, AI helps speed up marketing campaigns

and increase return on investment (ROI) by cutting down on the time and expense of segmentation and targeting (IBM 2023).

According to marketers worldwide as of December 2020, the use of AI in marketing has contributed to a 41% increase in revenue, as well as a 40% increase in the insights from marketing data. As previously mentioned, AI allocates time efficiently, and according to these statistics, there was a 35% reduction in time spent on data-driven tasks. As a result, the ROI on campaigns improved by 34%, resulting in an increased efficiency of 33% (Statista 2020).

In conclusion, incorporating AI in the marketing strategy has become a requirement for companies to gain a competitive advantage, improve decision-making, be more efficient, and boost both customer loyalty and engagement.

AI in Supply Chain Management: Predictive Analysis

In business, predictive analysis has a wide range of applications aimed at optimising supply chain operations and decision-making. At the same time, AI empowers predictive analytics to be faster and smarter than ever before (Lungarella, Iida, Bongard, and Pfeifer 2007). For instance, in demand forecasting, AI algorithms analyse previous sales data and industry trends, allowing organisations to forecast future demand. This information is useful in optimising production and distribution tactics, hence reducing inventory overstock and understock problems (Weingarten 2021). Another area where AI can assist is inventory optimisation, which uses predictive analytics to estimate ideal reorder points and safety stock levels.

Predictive analytics also improves pricing, personnel scheduling, transportation, and storage management. Real-time pricing adjustments powered by AI-driven algorithms enable firms to quickly adapt to market changes while increasing revenue (Garden 2023). Furthermore, staff scheduling becomes more efficient as predictive analytics foresee peak demand hours and skill requirements, optimising staff levels and enhancing customer service. Also, businesses may utilise predictive analytics in transportation management to optimise routes, precisely

anticipate delivery times, and resolve any delays (Biswas 2023). Finally, storage and warehouse management benefit from predictive analysis by projecting high-demand items and optimising their placement, minimising operational inefficiencies (Memon 2020).

As a consequence of these possible applications in business, AI-powered predictive analysis plays a crucial role in supply chain management as it provides valuable insights that optimise the whole supply chain. It helps businesses make informed decisions, ensuring the right products are available at the right time while minimising costs (Owczarek 2021). Moreover, according to McKinsey & Company, applying AI-driven forecasting to supply chain management can reduce errors by 20% to 50% and translate into a reduction in lost sales and product unavailability of up to 65%.

AI in Cybersecurity

In the cybersecurity landscape, the cyberattack surface is massive, and it is continuing to grow rapidly. This means that improving an organisation's cybersecurity posture now needs more than mere human intervention (Belani 2022). As a result, the integration of AI has emerged as a critical defence tool. Artificial Intelligence, with its rapid data processing and pattern recognition capabilities, is crucial in strengthening cybersecurity countermeasures.

For instance, AI can improve threat identification and analysis in cybersecurity. AI systems are capable of detecting anomalies in network and user behaviour and recognising known dangers through pattern analysis (Rehman and Saba 2014). Moreover, for log analysis, correlation, and alerting, AI is useful in Security Information and Event Management (SIEM) solutions. Its algorithm is capable of sorting through massive amounts of security logs and event data, alerting to potential security incidents, while traditional software systems cannot keep pace with the huge number of new malwares created every day (Belani 2022).

Regarding hacking attacks, AI improves email security by assisting with phishing detection. To detect these attempts, AI systems analyse email content, sender behaviour, and other criteria

(Moisset 2023). This proactive method protects organisations against one of the most popular cyberattack methods. Furthermore, by automating many components of cybersecurity processes, AI contributes to a better incident response: it can help security teams prioritise and respond to threats more efficiently by assisting in the early triage of security problems (Kaur, Gabrijelˇciˇc and Klobuˇcar 2023).

By applying AI-powered systems in these possible manners, companies can strengthen their safety measures and better defend against threats. Nowadays, it is crucial to integrate AI-driven solutions for an updated cybersecurity strategy. According to Forbes, 76% of enterprises have prioritised AI and Machine Learning in their IT budgets, due to the volume of data needed to be analysed to mitigate cyber threats. This is supported by BlackBerry's research results that revealed 82% of IT decision-makers plan to invest in AI-driven cybersecurity in the next two years.

In conclusion, while advantages may vary based on elements unique to each business, AI helps detect threats more quickly, minimising false positives, preparing for future threats, automating incident response, and increasing overall cybersecurity endurance. Nowadays, embracing AI in cybersecurity is not merely a technological choice, but a requirement for companies seeking to safeguard their digital domains (Garbo 2023).

AI in Talent Acquisition

According to McKinsey, the incorporation of Artificial Intelligence in talent acquisition delivers considerable benefits, with a reported 25% year-over-year growth in adoption. This spike translates to increased income and cost savings for organisations that embrace AI. Furthermore, Artificial Intelligence improves decision quality by providing data-driven insights for strategic decision-making (Murugesan 2023).

AI solutions in talent acquisition help to streamline recruiting by automating operations like resume screening, decreasing the need for manual labour. This automation allows recruiters to

concentrate on more quality candidates, increasing efficiency (Murugesan 2023). Ideal Corp's deployment of AI, for example, resulted in a 71% decrease in recruitment expenses and a tripling of recruitment efficiency (Gaidhani 2020).

Additionally, by matching profiles to job requirements and forecasting future performance using application data, AI improves the accuracy of candidate matching. To reduce unconscious bias in hiring practises, it also helps with inclusive job descriptions and improving candidate filtering (IBM 2021). Moreover, AI is essential in enhancing the applicant experience in talent acquisition by increasing the number of eligible applicants and promoting applications. Furthermore, by analysing data to find patterns indicating low engagement or high turnover rates, AI improves employee engagement and lowers turnover. HR professionals can proactively address issues through training and workplace improvements thanks to the information provided by this analysis (Kimseng 2020).

Instead of depending on HR managers to conduct surveys, interviews, observations, assessments, and job data analysis to determine skill gaps, companies can now promote continuous learning in training and development by utilising a variety of AI tools (Jia 2018). Additionally, AI supports the professional development of employees by optimising learning experiences for improved results, analysing data to identify knowledge gaps and suggesting customised training programmes (Loo See-Beh 2018).

Lastly, AI plays an important role in performance management by analysing employee performance data using algorithms. Organisations can develop tailored strategies to boost overall performance and productivity while identifying areas for improvement (Oswald 2019).

AI in Risk Management

In risk management, AI has become paramount in analysing large amounts of unstructured data more quickly and with reduced reliance on human intervention (Basrai 2021). Given that unstructured data constitutes more than 80% of all enterprise data (Education 2021), cognitive

technologies can be used to derive insights from this type of data. Therefore, businesses may acquire a major competitive edge by utilising these technologies to predict and control risks (Deloitte 2016).

In credit risk, AI can be used to assess credit scores by analysing borrower data and predicting their probability of default (Božić 2023). Multiple studies have shown that ML models outperform benchmarks in predictive accuracy and proposing effective hedging strategies, resulting in cost savings (Aziz and Dowling 2018). However, these advanced techniques lack transparency, making it difficult to understand loan approval or denial for specific borrowers. Regulatory requirements have given rise to the conception of explainable IA, offering a variety of ML methods that establish a balance between explainability and predictive accuracy. Although these techniques provide consistent explanations that are aligned with financial reasoning, there is room for developing more robust models (Misheva 2021).

Regarding market risk management, ML is especially useful for stress-testing market models to detect unforeseen trading risks. Cluster analysis and DL models are widely used in financial firms to identify associations between assets and optimise trading strategies (Aziz and Dowling 2018). Amidst the COVID crisis, spikes in volatility and uncertainty in financial markets posed challenges for many institutions in rapidly assessing value at risk (VaR) for various asset classes, which led to substantial losses. Given the consequences, some institutions have started to integrate ML techniques into more advanced models, enabling faster calculations for real-time risk management of sophisticated products and more precise valuations (McKinsey 2020).

In the realm of fraud detection, institutions can harness AI capabilities to keep track of financial transactions and detect potentially suspicious login activities (Misra 2023). Although AI provides numerous opportunities, only 13% of organisations in various industries effectively employ it for fraud detection and prevention (Bradley 2023), given that fraud has different levels of complexity. For example, credit card fraud is a suitable application for ML algorithms

given the high transaction volume and well-defined features. Conversely, money activities often lack precise legal definitions and involve multiple external parties, which makes data sharing among financial institutions more challenging. Considering this, innovative approaches that tackle these intricacies should be studied (Bao, Hilary, and Ke 2022).

Overall Challenges of AI

To effectively harness and integrate AI, a thorough understanding of its challenges is required. Making informed decisions about the best AI technologies for a company's specific needs is impossible without this foundational knowledge.

According to a McKinsey & Company study, organisations face significant challenges in effectively leveraging AI. Only 17% of the companies polled have identified all potential AI opportunities, and only 18% have developed a coherent data acquisition strategy for AI initiatives (Figure 1). Strategic issues are consistently identified as the primary impediment to AI adoption, with the lack of a well-defined AI strategy being the most frequently mentioned impediment. AI initiatives are also hampered by a lack of qualified talent, functional silos, and leadership commitment (McKinsey & Company 2018).

Furthermore, there are significant ethical concerns around bias and fairness in the sphere of Artificial Intelligence. AI systems may assimilate biases from their training data if not meticulously crafted, potentially resulting in unjust or prejudiced results. This ethical quandary is significant because biased AI has the capability to sustain and worsen pre-existing societal disparities (Harkut 2019).

With respect to data privacy and security, AI systems frequently depend upon access to confidential information about customers or employees. Safeguarding this data is crucial to maintain trust, comply with regulations, and prevent damage to reputation (Harkut 2019).

Additionally, high implementation costs are a significant impediment to widespread AI adoption. Creating AI models necessitates specialised talent, infrastructure, and resources, as

well as research and development investments. This includes hiring costs for data scientists, Machine Learning engineers, domain experts, and the hardware and software infrastructure required for AI development and testing (Harkut 2019).

Inadequate expertise is a significant hurdle to AI's widespread enactment. Companies that lack the necessary knowledge may face difficulties in effectively implementing AI solutions. This could point to the development of AI systems that do not provide the expected benefits and may even disrupt current processes, resulting in ineffective AI implementation (Celik 2022).

Moreover, job displacement is a frequent regard among employees in the context of AI, particularly in industries with high automation potential like manufacturing and customer service (Ekwueme 2023). This apprehension stems from the perceived threat of task automation leading to job loss. Finally, employees frequently lack understanding of AI, viewing it as complex and disruptive, fuelling scepticism and resistance. Resistance is exacerbated by personal biases against technology or a preference for traditional methods. Concerns have also been raised about AI taking over decision-making processes, potentially undermining job autonomy and authority (Malik 2021).

The Regulatory Landscape

The AI regulatory landscape is quickly changing, driven by employees and international organisations working to create proper rules and standards for the advancement and handling of AI.

A prominent illustration of strict rules shaping AI applications is the General Data Protection Regulation (GDPR) within the European Union (EU). This comprehensive framework mandates explicit consent and transparent AI decision-making, safeguarding the rights of data subjects (European Parliament 2020). In 2018, British Airways experienced significant enforcement of GDPR when the UK Information Commissioner's Office imposed a £20 million fine on the airline for insufficient data protection safeguards. This incident served as a concrete

illustration of the tangible consequences of failing to comply with regulatory requirements (Canayaz 2021).

In addition to legally binding regulations, non-binding AI ethics guidelines issued by various entities offer a framework for responsible AI development. Although not legally binding, these guidelines serve as valuable resources for organisations and policymakers. The Organisation for Economic Co-operation and Development (OECD) AI Principles, emphasising transparency, accountability, and human values, stands out among these guidelines (OECD 2019). These principles are crucial in influencing moral principles within the dynamic realm of Artificial Intelligence, potentially influencing future regulations. Another example is Brazil's National AI Strategy, which emphasises the importance of guiding AI technologies for global benefits. The strategy is intended to be inclusive and open to public input, to involve all sectors in AI development and to maximise benefits in scientific progress, competitiveness, productivity, and overall welfare. It outlines various policy objectives for the inclusive and beneficial deployment of AI (OECD 2020), which are aligned with the G20 AI Principles.

This nuanced exploration of AI regulation, which includes legal frameworks, ethical guidelines, and national strategies, highlights the complexity of governing Artificial Intelligence.

AI Integration in Consulting: Industry Best Practices

The omnipresent influence of AI is undeniable across every industry, and the consultancy sector is no exception. Consulting is certainly one of the industries where AI is changing the nature of work, how the work is done, and who does it (Forbes 2023). In an era where data-driven knowledge and efficiency are crucial, consulting firms have recognised the revolutionary potential of Artificial Intelligence, with a particular focus on Generative AI. These firms are increasingly incorporating Gen AI technologies into their operations to gain a competitive advantage, improve efficiencies, and accelerate innovation (EY 2023). This can

be accomplished by utilising cutting-edge software tools that accelerate data-intensive routine processes during problem investigation and solution development (Volker Nissan 2019). However, AI alone is insufficient. Businesses should not think of Artificial technology in isolation, they should incorporate it into their current procedures and systems to enhance human capabilities and processes (Boston Consulting Group 2023).

Additionally, as AI consultants have the powerful capacity to analyse data from numerous sources and detect patterns that human consultants may lack the time or knowledge to uncover, the demand for AI consulting services has exponentially increased in the past year (Forbes 2023).

In 2023, as Gen AI is on the rise, businesses are remarkably interested in incorporating Generative AI solutions into their operations as they recognise the revolutionary potential of this technology. Clients are willing to pay millions in consulting fees to help deploy Gen AI into their companies because they expect a payback period of up to three months (Goetz 2023). As a result, big consulting firms are heavily investing in this technology to better meet their clients' needs and the fast movers are planning large-scale implementations to gain a competitive advantage (KPMG National Managing Principal 2023).

For instance, Price Waterhouse Coopers, PwC, is investing $1 billion to strengthen AI customer offerings and tech partnerships, as well as to train 65,000 employees to upskill its workforce for the AI-driven future by forming a partnership with Azure OpenAI Service (PwC 2023).

Additionally, Ernst & Young (EY) announced a recently made investment of $1.4 billion into AI (The Wall Street Journal 2023). Another relevant progress made by EY, in addition to this investment, is the development of its large language model "EY.ai EYQ," with intentions to train 400,000 employees on Artificial Intelligence (The Wall Street Journal 2023). Furthermore, EY also created strategic collaborations with renowned technology firms such as

IBM, Microsoft, and Dell to explore the broad frontiers of AI, assuring its responsible and secure adoption (Lloyd 2023).

Moreover, Deloitte is making significant efforts to leverage the disruptive power of AI through its strategic relationship with NVIDIA. This partnership highlights Deloitte's goal of responsibly integrating Generative AI into its services, supported by its trustworthy AI framework to ensure ethical and safe AI development (Deloitte 2023). In addition, Deloitte created the Deloitte AI Institute to help organisations connect all the different dimensions of the rapidly evolving AI ecosystem.

Ahead of the competition, McKinsey & Company has been developing “Lilli”, a new Generative AI tool. This interactive platform provides insights to employees based on a knowledge base of thousands of documents and archive data. Moreover, workers say Lilli saves up to 20% of their time preparing for meetings and improves the quality of their expertise and contributions (McKinsey 2023). The same company had already acquired “QuantumBlack” in 2015, a top provider of data analytics and AI-driven solutions (Financial Times 2019). This strategic decision strengthens McKinsey's potential to serve customers from a variety of industries by enhancing its ability to provide data-driven insights and solutions.

Additionally, the acquisition of Gamma by Boston Consulting Group (BCG) demonstrates the firm's aggressive efforts to invest in AI and advanced analytics. This strategic move enables BCG to provide customers with unique problem-solving methodologies that leverage AI and Machine Learning to derive insights from large datasets and make more informed decisions. This acquisition translates BCG's commitment to providing customers with cutting-edge and tailored solutions that leverage the potential of Artificial Intelligence to address difficult business challenges and drive long-term success (Boston Consulting Group 2019).

Regarding impact, BCG opted to evaluate the impact of AI on its employees, concluding that consultants using GPT-4 completed tasks 25.1% faster and produced 40% higher quality

results, as illustrated by Figure 2. This demonstrates that the best BCG performers have access to AI technologies (Dell'Acqua, Rajendran, McFowland, Krayer, Mollick, Candelon, Lifshitz-Assaf, Lakhani, and Kellogg 2023).

Challenges and Risks of AI Adoption in the Consulting Industry

While AI presents remarkable opportunities to improve efficiency, it also brings several challenges that must be tackled. Addressing these obstacles is essential for consulting professionals striving to leverage AI's power.

One of AI's limitations in Consulting is its inability to understand the complexity of human behaviour and decision-making. While AI can provide data-driven insights, it may fail to incorporate emotional or social variables that influence decisions. Moreover, AI algorithms may not think creatively or provide original solutions as those provided by consultants (Forbes 2023). Regarding bias and discrimination, these data-driven technologies can replicate and exacerbate societal practices of marginalisation, inequality, and discrimination. AI systems run the risk of duplicating their developers' biases and prejudices as many of the features, metrics, and analytical frameworks of data mining models are chosen by their developers (Gîngută, Stefea, Noja, and Munteanu 2023).

Another disadvantage for consulting firms is the possibility of witnessing a large decline in their clients' willingness to pay for AI-based solutions as they become more widely available. The internet has essentially turned information that was once closely guarded into a commodity. The true added value nowadays is in developing fresh competitive advantages with the data you already have (Harvard Business Review 2017).

Finally, the fast-growing field of AI forces consulting firms to adapt their business model. The reduction in the number of consultants required and/or the number of hours per task required as some daily tasks will be automated can be used to explain why the current business model is being disrupted. Consulting firms should take into consideration that this shift is typically a slow

process since it involves several steps, and companies need to be careful and considerate throughout the whole process (Gonfalioneri 2020).

AI Integration in Banking and Financial Services: Industry Best Practices

Recent advancements in AI technologies promise to drive innovation in the Banking sector at an unprecedented speed and scale (Deloitte 2021), potentially generating up to $1 trillion in additional value worldwide (Biswas et al. 2020). Projections for the current year (2023) indicate savings of around $447 billion. As a result, AI implementation is paramount for financial institutions to remain competitive in a rapidly evolving market with changing customer expectations (O. H. Fares, Butt, and Lee 2022).

In 2021, despite 86% of financial services AI adopters considering AI to be crucial for their business success (Deloitte 2021), only 35% fully incorporated it at scale (Statista 2023). Notably, only 1% of financial services companies are AI leaders. Across all industries, the Banking and Capital Markets sector has the lowest median AI maturity score at 27 out of 100, 9 points below the overall median (Figure 3). Legal and regulatory constraints, inadequate AI infrastructure and a scarcity of AI-trained professionals are among the challenges that most contribute to this low level of AI maturity (Accenture 2023).

Nevertheless, global investments in financial technology have skyrocketed, as evidenced by the number of fintech start-ups more than doubling from 2018 to 2023 (Statista 2023). In the Banking sector, in particular, AI adoption is projected to reach $64.03 billion (Maven 2023).

Banks can leverage AI across different channels, extending from front-office functions aimed at streamlining customer identification and authentication to emulating live employee interaction through chatbots and voice assistants (Digalaki 2022). While chatbots are already being employed at large scale in banks, many customers find them unsatisfactory for providing only general information or basic answers. Nevertheless, there is an increased effort to develop customer-centric AI applications (Thowfeek, Samsudden, and Sanjeetha 2020). The

introduction of language models (such as ChatGPT 3) poses an opportunity to revolutionise the Banking sector, particularly in the sphere of conversational banking, as it can simplify user experience and make financial services more accessible through the use of chat or voice interfaces, even for non-native speakers (Kreger 2023).

Artificial Intelligence is also applied in middle office functions to evaluate risks, identify fraud, enhance anti-money laundering procedures, as well as conducting regulatory checks (Digalaki 2022). Feedzai, for instance, utilises AI for risk management and fraud detection by monitoring customer behaviour and financial activity across various banking channels (Feedzai 2023).

Lastly, in the back office, AI can be used in the credit underwriting process (Digalaki 2022). Despite AI's widespread use across various banking functions, its adoption has been slow in commercial lending due to resistance caused by the lack of interpretability in ML models and incompatibilities with legacy systems. Additionally, the credit lending process has traditionally relied on the analysis of subjective factors and default reasons, leading to the widespread prevalence of manual processes. Despite these factors, the integration of more advanced algorithms with improved predictive power can lead to tangible benefits, such as reduced losses, more favourable capital requirements, and potential cost savings (SAS 2020). Looking at the big picture, traditional credit decisions often take up to two weeks due to a multi-stage process. However, AI integration allows for instant decisions, providing customers with empowerment and time-savings, while balancing organisational risk, maximising profit, and increasing financial inclusion (O. H. Fares, Butt, and Lee 2022).

More recently corporate and investment banks (CIB) have begun exploiting Gen AI for its natural-language understanding (NLU) capabilities, offering a significant step up over NLP-based applications. It can enhance productivity, improve compliance, and support client services. Some leading banks are already leveraging gen AI. For example, Morgan Stanley has partnered with OpenAI to enhance the client service provided by Financial Advisors (Morgan

Stanley 2023). Estimates indicate that integrating Gen AI can result in productivity gains of 30% to 90% in core CIB activities, potentially increasing operating profits by 9% to 15% (Giovine et al. 2023). Gen AI holds significant promise in areas where content creation is labour-intensive and validation is straightforward, including marketing, sales, decision support, research, and trading (Gopalakrishnan, Srinivas, and Chauhan 2023).

In the long run, Gen AI may drastically reduce programming expenses, improve the speed of development and enhance code analysis. Additional opportunities will arise as banks tailor AI models using their data, all while ensuring responsible AI practices are embedded by design and imposing strict guidelines for data acquisition, refinement, and deployment (Abbott 2023).

Challenges and Risks of AI Adoption in the Banking Industry

Today, incumbent banks face a dual challenge of balancing the need for fintech-like speed and flexibility with the maintenance of traditional financial-service enterprise scale, security, and regulatory requirements. Despite significant investment in technology, many banks struggle to scale AI adoption due to a lack of clear AI strategy, weak core technology systems, fragmented data, and outdated operating models. Their core systems often lack the flexibility required for AI applications, and data silos hinder intelligent decision-making. Additionally, banks' traditional organisational structures and processes hinder innovation and experimentation, leading to reliance on third-party technology providers instead of developing in-house capabilities (Biswas et al. 2020).

Given these challenges, the Banking sector is lagging behind, as it has one of the lowest levels of AI implementation at scale compared to all other industries, standing at just 5% (Capgemini 2021).

AI Integration in Human Resources Firms: Industry Best Practices

In the HR business landscape, where the need for quick decision-making overcomes traditional deliberation, Artificial Intelligence emerges as a critical tool, allowing for immediate interventions in human resource management. By seamlessly integrating real-time personnel feedback and assessment, AI addresses workforce shortages and skill gaps through the automation of tasks. A global survey reveals that approximately 30% of IT professionals experience time savings through the implementation of AI and automation tools (IBM 2022). The multifaceted benefits of AI, as illustrated in Figure 4, profoundly impact Human Resources operations.

IBM, at the forefront of innovative solutions, provides extensive career guidance to all employees with Watson Career Coach (WCC). Functioning as a personalised AI advisor, WCC engages employees in exploring their career options through natural language conversations. This AI-driven system combines current employee profiles with historical data, offering a comprehensive experience. WCC includes a feature that matches job opportunities, allowing users to upload resumes or respond to skill-related queries. It not only recommends roles based on qualifications and aspirations, but it also facilitates long-term career planning via an easy-to-use navigation tool.

In the IBM Global AI Adoption Index 2022, it was reported that 45% of companies employ artificial intelligence to tackle shortages in workforce or skills, particularly in the domains of recruitment and human resources (IBM 2022). For instance, IBM's use of chatter analysis on internal social media assists in identifying key concerns and providing personalised suggestions to improve team engagement. For example, if an employee receives recognition, the AI tool may suggest that the manager share it, which has been shown to increase engagement. The "Engage at IBM" AI app evolves based on leader feedback, enhancing managerial effectiveness in team motivation.

Setting a benchmark in AI adoption, Oracle HCM Cloud reveals that 64% trust robots over supervisors, and 50% seek advice from robots rather than managers. The company integrates AI, natural language processing, and Machine Learning into the Oracle Digital Assistant, delivering tailored benefits and personalised recommendations based on historical interactions. The Oracle Digital Assistant ensures a personalised experience across various interfaces within Oracle HCM Cloud, spanning laptops, mobile devices, messaging apps, and voice commands. Remarkably, its capabilities extend beyond HR to domains like finance, supply chain, and customer experience (Oracle 2019).

Noteworthy is Oracle's HCM Cloud platform, which distinguishes itself by internally integrating cutting-edge technologies, including the Digital Assistant, eliminating reliance on third-party solutions. This integration streamlines the complexities associated with merging technologies, thereby mitigating post-upgrade concerns, and addressing data privacy issues. The system efficiently employs artificial intelligence in recruiting, leveraging market data to optimise job proposals and increase the chances of attracting desired applicants. AI adapts offers based on standard HR data, predicting acceptance by considering factors such as job role, position, and career stage (Oracle 2019).

Challenges and Risks of AI Adoption in the Human Resources Industry

There exists a substantial disparity between the objectives of organisations and the tangible application of Artificial Intelligence in the business environment. Even though 75% of executives see AI as empowering and 85% see it as a competitive advantage, only 20% of companies have integrated AI into specific aspects, with only 5% achieving extensive integration (BCG 2017).

The human resource management (HRM) field still presents several barriers to AI technology adoption (University of Leeds 2018). Notably, AI in HRM is still in its early stages, with few well-established theories and frameworks.

Ethical debates surrounding AI primarily revolve around concerns about job displacement, prompting ethical questions regarding how organisations navigate workforce changes, such as reductions or retraining initiatives (The White House 2022). During the AI transition, companies must address employee concerns and resistance. Transparency about job impacts, specifying affected positions, explaining changes, and including potential role expansions, are paramount (Kaur 2023). Ethical dilemmas arise when AI unintentionally exhibits biases, influencing job candidates or employees based on factors such as race, gender, or age. Biases from training data can lead to unfair practices in HR processes such as recruitment, advancement, and performance assessments (IBM 2021).

Moreover, AI systems in HR manage substantial amounts of personal data, including resumes, interview recordings, and performance assessments. Securing these data and addressing privacy concerns is critical for continuous organisational operations, especially in the context of AI implementation in HR, where safeguarding HR data privacy is crucial. Securing employee data is of utmost importance for organisations.

AI in KPMG - Catarina Pereira

Introduction

When embarking on a journey through the complex world of audit, tax, and advisory services, one encounters KPMG, a global giant, and a prominent member of the esteemed “Big 4”. Operating across 146 countries and territories, KPMG's extensive global reach, supported by over 227,000 professionals, presents both opportunities and challenges in a continually evolving field. Despite their legal differences, all KPMG firms are a member of a global network that is supported by the KPMG International Cooperative, which is situated in Switzerland.

In 2022, KPMG experienced a remarkable year of growth, reporting a 14% increase in annual aggregated revenues, totalling an impressive US$35 billion. Growth was evident across all segments of KPMG's global operations, with Advisory leading the way with a remarkable 19% increase, followed by Tax & Legal Services at 10%, and Audit at 8%. These achievements underscore KPMG's unwavering dedication to delivering high-quality services and innovative solutions, even in challenging times, demonstrating its global expertise and ability to inspire confidence and drive transformative change for its clients.

The company's drive for excellence converts challenges into chances for development and innovation, which is consistent with the way Artificial Intelligence is changing the world. In the upcoming chapter, this dissertation will delve into an exploration of KPMG Portugal's pioneering AI initiatives.

Methodology

To supplement the material of this chapter, two distinct research methodologies were used. Initially, an in-depth analysis of internet sources, including KPMG's official website and relevant publications, contributed significantly to the robustness of this analysis. In addition, conducting interviews with KPMG Portugal employees was a critical component of the

research. These interviews provided first-hand perspectives, personal insights, and subject expertise, which supplemented the data previously acquired. The combination of these two approaches improved the overall research findings, resulting in a more comprehensive understanding of the subject in the study.

In the context of this analysis, it is important to clarify that the main focus will lie on KPMG Portugal as an independent member firm and not on KPMG's full global activities. Hence, the methodology used in this study was carefully designed to give an in-depth comprehension of KPMG Portugal's Artificial Intelligence endeavours.

A series of seven interviews were performed with influential company members who have a direct stake in KPMG Portugal's AI journey. The interviewing process was designed to encourage in-depth conversations on KPMG's adoption plans for AI, the specific initiatives being taken, and the transformational effects seen in the Portuguese context. The interviewees were carefully chosen to provide a diverse and trustworthy perspective and they include the Director of Audit Innovation, the Head of Talent Acquisition & Employer Branding, a Consulting Partner, a Consulting Manager, the Head of Innovation, and two employees from the Training department. This broad group of interview subjects provides a more comprehensive and wide-ranging perspective of the company, enhancing the breadth and depth of knowledge gained from the research.

Interviews were conducted either in the Lisbon office or via Microsoft Teams, and these will play a crucial role in serving as the basis for our conclusions within the context of this study. This chapter's conclusions will be naturally limited by the data collected from the conducted research and the knowledge obtained from the interviews.

Additionally, as part of the research methodology, active participation was undertaken in an extensive and enlightening session titled "AI Microsoft Demos: KPMG," conducted online via Microsoft Teams. This marathon event, spanning a substantial 15 hours, brought together

colleagues from across the globe, each elucidating a distinct AI technology currently employed by KPMG. The workshop was very helpful in providing a thorough grasp of the many AI technologies used by KPMG Portugal, which enhanced the body of information for this study. Due to the nature of its activities, KPMG Portugal's work frequently involves sensitive and confidential data concerning client projects. Hence, confidentiality rules were strictly followed throughout the interview process and were taken into consideration in the development of the analysis.

AI Investments and Partnerships

KPMG and Microsoft formed a significant alliance in 2023, agreeing to invest $2 billion in cloud and artificial intelligence (AI) over the following five years. This investment reflects a strategic vision that leverages technology to improve global operations, with estimated revenue outcomes indicating that an additional $12 billion may be generated, or approximately 7% of KPMG's global revenue (KPMG 2023). The relationship secures early access to emerging technologies such as Microsoft 365 Copilot and interaction with the Azure cloud platform, indicating a significant step forward in the adoption of Generative AI, which is supported by Microsoft's existing collaboration with OpenAI.

The alliance between KPMG and Microsoft is driven by a multifaceted strategy, firstly focusing on the co-creation of innovative solutions tailored to meet the complex demands of today's market. Secondly, it aims to transform KPMG's Advisory practice by developing a new project delivery platform hosted on Azure. This platform is designed to integrate Azure OpenAI Service with sophisticated Machine Learning models, thereby streamlining, and enhancing the delivery and effectiveness of client services. Lastly, the partnership fostered the development of a Generative AI-powered virtual assistant. This tool aims to transform client service models, which reflects KPMG's dedication to providing exceptional value to clients and underscores its broader commitment to technological innovation.

This initiative also extends to internal transformation, aimed at boosting operational efficiency and empowering employees. Utilising Microsoft 365 Copilot early in their strategy reflects KPMG's effort to provide their workforce with direct access to Generative AI capabilities, thereby enhancing internal operations and focusing on high-value tasks. Moreover, this partnership comprises a training program to guarantee that KPMG experts are well-equipped to use Generative AI.

According to KPMG's Global Chairman, a sizable percentage of KPMG's investment will go towards Generative AI, which many companies are eager to apply to their finances in order to save costs and produce new efficiencies.

In a broader sense, the collaboration between KPMG and Microsoft spans these three crucial areas, each of which exemplifies KPMG's ongoing dedication to innovation, client-centric strategies, and internal operational efficiency through the strategic deployment of AI technology. This multidimensional strategy highlights KPMG's determination to be at the forefront of technological advancements, as well as its commitment to providing excellent value to its clients and empowering its people.

It is worth mentioning that rather than being restricted to KPMG Portugal, this partnership was established at a higher organisational level, embracing KPMG as a whole. As a result, it has an impact on every independent member company inside the KPMG network, for instance, KPMG Portugal.

AI Applications and Impact

The examination of KPMG's integration of Artificial Intelligence technologies reveals a broad spectrum of solutions aimed at enhancing the performance and efficiency of organisational processes. In striving to refine offerings within the realms of audit, tax, and consulting, KPMG has strategically implemented AI to bolster client results and operational profitability. This subchapter will outline several key AI applications that KPMG has methodically developed

and embedded within its operational framework, assessing their significant impact on the landscape of professional services.

The first interviewee was an Audit Innovation Director. In this interview, the focus laid on how the Audit Function is incorporating Artificial Intelligence into its daily operations and within the department. The respondent gave valuable insights into how KPMG Portugal is integrating AI and what are the platforms that are currently leveraging their work.

In the field of Audit, accuracy and precision are essential pillars. Auditors face several complex issues as they work to ensure assurance and financial integrity. Organisations are increasingly seeking cutting-edge technologies to help them overcome these obstacles as they work to improve their audit capabilities. One of those challenges is the requirement to constantly review a wide range of documents, regulations, and procedures. Alex is an AI-powered virtual assistant that is one example of a technological breakthrough that has made its way into KPMG Portugal's audit department. It is intended to assist KPMG Portugal professionals in more quickly and effectively locating the information they require by combining machine learning and natural language processing to comprehend the purpose of a user's query and offer pertinent responses.

Moreover, even if they are reliable, traditional auditing processes frequently face issues with subjectivity, large datasets, and potential biases that could unintentionally lower the standard of decision-making. In response to these challenges, KPMG Clara AI has emerged as a necessary innovation within KPMG Portugal's audit department. The conventional audit approach, labour-intensive in its essence, often opens doors to subjectivity, human errors, and inefficiencies. KPMG Clara AI was developed to be the auditors' own 'chatbot'. It allows auditors to ask questions about how to perform audit procedures based on KPMG's Audit Manual and other relevant documents that are essential in the daily operations of auditors. The library within the KPMG Clara platform uses external information and the audit libraries within

Alex to construct the answers, which means that a person can ask questions, and the response can be a combination of common and public knowledge with KPMG's specific methodology information.

Audit procedures can be exceedingly time-consuming, demanding meticulous attention to detail and comprehensive data analysis. In response to these challenges, the Audit department has integrated advanced technological tools, notably DataSnipper and an Intelligent Automation Platform that interacts with Microsoft Excel. This tool is crucial in automating repetitive and time-consuming tasks and streamlining data validation for both audit and finance teams within Excel. Leveraging Microsoft Vision, DataSnipper can interpret a variety of documents, including those that are handwritten or in different languages, significantly reducing the manual effort typically required for data-related tasks. This automation is particularly beneficial for auditors who engage in methodological research, a process often characterised by the extensive reading of complex information. Through these technological advancements, KPMG Portugal enhances efficiency by automating routine processes and refining data validation techniques.

Moreover, KPMG Portugal's Audit team developed K-City, which has a crucial planning component that comprises different dimensions. It not only uses Artificial Intelligence to select the most suitable people for the different projects, based on experience and availability but also optimises team synergies and project workflows. As a result, K-City significantly improves the likelihood of successful project execution and resource allocation, ultimately contributing to the team's overall effectiveness and client satisfaction.

Finally, and to enhance risk identification, the Audit function has integrated MindBridge's AI into its digital audit processes. This technology automates the examination of accounting entries, surfacing irregularities for auditors to scrutinise. The result is a more efficient and accurate audit process that upholds the integrity of financial data for client projects.

According to further research, KPMG Portugal's AI efforts also extend to the tax function, where advanced technologies are being adopted to enhance accuracy, improve service delivery, and streamline processes. Advanced AI tools, such as AI-powered virtual assistants, support tax professionals by providing predictive analysis for more precise technical evaluations, and Microsoft Azure's AI-enabled platforms speed up the creation of solutions tailored to individual clients. This deliberate application of AI has a major impact on the fields of tax advice and compliance by supporting customers' sustainability goals, increasing efficiency, and providing exact tax function performance.

One of the interviewees gave a special emphasis on the launch of KPMG AVA, a Tax digital assistant driven by Google Vertex and GPT models, to address these issues. KPMG Advanced VAT Analysis (KPMG AVA) can go through 100,000 invoices per hour with a 97% accuracy in predicting invoices that are booked wrongly or invoices that might have some special requirements (KPMG, 2023). By streamlining routine tasks and reducing the risk of costly errors, this tool is able to significantly elevate the quality of work, thereby enhancing overall productivity and client service quality.

In the Consulting function, the interviewed Manager mentioned that there have been already several Machine Learning applications within KPMG Portugal to assist clients in areas such as forecasting, route optimisation, or even telecommunications linkages. These tools enable accurate predictions for market trends and streamline logistical operations, essential for client strategy and supply chain management.

As explained by the Consulting Partner at KPMG Portugal, AI is instrumental in addressing the challenges of providing timely global client support across various time zones. AI enables the automation of scheduling, powers AI-driven chatbots for 24/7 assistance, and enhances workload management through predictive analytics. These AI capabilities ensure that KPMG Portugal can deliver efficient and responsive solutions to its international clients, optimising

resource allocation and promoting the firm's ability to maintain high standards of service regardless of geographical and temporal barriers.

Many consulting companies view the usage of AI, such as ChatGPT, with a mixture of hope and concern. It presents several concerns, including the fear of losing human expertise and trust in client relationships, even though it can also increase productivity and provide data-driven insights. However, KPMG found a way to harness the power of AI while addressing these concerns. KPMG Australia's creation of KymChat, its own version of ChatGPT, provides a compelling example of how consulting firms are adopting AI to their advantage. This system is being implemented in Portugal and has been designed to prioritise client confidentiality, ensuring that AI complements rather than compromises the core values of Consulting.

The Future of Learning at KPMG Portugal

According to the two interviewees from the Training department, the company is getting ready to adopt a powerful tool that will function as an intuitive overlay over the current Learning Management System (LMS), thereby transforming the educational process into something similar to a customised Netflix platform. The main goal of this innovative technology is to introduce an on-demand, dynamic learning paradigm. This application enables KPMG staff members to do easy searches for learning materials, just as people use search engines such as Google to locate information.

The most remarkable feature of this AI-driven method is its capacity to measure each person's competence level knowledge in detail. Employees are able to evaluate their own skills, and the system generates scores. Moreover, colleagues can assess one another's proficiency, generating an ongoing feedback cycle. In this way, employees instead of having a static repository for their training, will be able to look at their skill development and competence in a much more on-demand, user-friendly, and easier way than what exists today.

The new learning platform promises to remove the complexity of the old system and have a significantly improved user interface. It promotes personal responsibility, enabling staff members to direct their own learning processes. In this future platform, it will be possible to make recommendations about specific courses or resources to peers based on shared interests and learning goals. In this sense, the organisation's concept of design for the platform is based on the idea that learning should be an enjoyable, self-directed activity that is similar to picking and watching episodes of a favourite Netflix series.

In conclusion, KPMG Portugal's use of AI in training is a bold step towards a time when education will be a highly active, personalised, dynamic process rather than a static one. According to the interviewees, in addition to giving staff members the freedom to direct their own professional growth, this platform puts the company at the forefront of cutting-edge learning strategies, guaranteeing its relevance.

AI Gaps and Recommendations

While KPMG Portugal has been proactive in integrating Artificial Intelligence across various functions, there appears to be a discernible gap in its application within the scope of Human Resources, particularly in the recruitment process. This gap was identified during an interview with the Head of Recruiting at KPMG Portugal.

The Head of Recruiting at KPMG Portugal has expressed reservations regarding the extensive use of AI in the CV screening process. Her concerns primarily revolve around AI's current limitations, where it predominantly relies on keyword matching. She argues that this approach may inadvertently overlook promising candidates if their CVs do not precisely align with predefined criteria. Her viewpoint underscores the vital role of the 'human touch' in recruitment, emphasising the need for a more comprehensive evaluation of candidates that goes beyond algorithmic keyword searches.

However, it is essential to note that the HR department has not entirely dismissed AI from its operations. In certain aspects of the recruitment process, it utilises AI-powered tools to aid in creating job descriptions. For instance, they employ a tool called Textio, which actively identifies and corrects biases in job descriptions. This ensures that the language used is inclusive and avoids unintentionally targeting specific groups, such as gender or age.

In identifying this gap, it's clear that although KPMG Portugal wants to lead the way in technology innovation, it maintains a conscious decision to limit the use of AI in recruitment. Nevertheless, this presents an opportunity for further exploration. KPMG Portugal should investigate ways to successfully incorporate AI into recruitment without compromising the human-centric approach they value. One possibility for exploration is leveraging KPMG's partnership with Microsoft and considering tools such as AI Builder, which has a feature of extracting information from documents, which could be done with CVs, saving time and enhancing the recruitment process.

Furthermore, it became clear that leadership roles across various divisions at KPMG Portugal were well-informed about AI potential and improvements, while junior-level positions lacked comprehensive AI-related information. This disparity demonstrates a large transparency gap within the organisation, emphasising the significant variance in AI-related knowledge between lower and higher-ranking employees. This gap results in many employees struggling to keep up with the most recent advances in Artificial Intelligence. Addressing this gap requires encouraging open communication across all levels of the organisation (Forbes 2021), since in this fast-changing industry sometimes it can be hard to always be updated on what is going on or on possible changes. Moreover, it is noticeable that those in higher positions typically have a more profound comprehension of how to use AI tools in an organisation. Comprehensive training programmes for each AI tool in KPMG Portugal's toolbox should be given top priority in order to close this knowledge gap at all levels. In this way, Practical, hands-on experience

with the tools' functions should take precedence over academic understanding in these training programmes (Harvard Business Review 2019).

In one of the conducted interviews, one Manager highlighted that KPMG Portugal, unlike other consulting firms, does not have a specialised AI/ML unit. In this sense, in the future, KPMG Portugal should strongly consider creating a dedicated department that specialises in delivering AI-powered solutions to clients. Having an AI unit not only significantly accelerates AI adoption but also guarantees that AI initiatives and the organisation's strategic goals are in line, making it easier to allocate resources to AI projects with a significant impact. It also centralises capabilities and infrastructure and makes it possible for the unit to put Machine Learning Operations (MLOps) into practice throughout the whole company (Harvard Business Review 2023). As a result, KPMG Portugal would benefit from hiring data scientists and AI specialists to create personalised AI solutions that are suited to the particular requirements of each customer. This will close a possible resource allocation gap in contrast to specialised technology consulting companies like Accenture.

Furthermore, when attending the Microsoft Demo sessions, the existence of a gap in KPMG Portugal's AI strategy was quite noticeable, which is the company's current inability to accurately measure the return on investment (ROI) for AI initiatives. The company faces challenges in assessing and measuring the impact of artificial intelligence (AI) on its business outcomes because it lacks precise key performance indicators (KPIs) and comprehensive assessment metrics. To solve this issue and improve the efficacy of AI adoption, it is recommended that individual KPIs and indicators are defined for each AI project and aligned with distinct business objectives. Implementing AI analytics tools for accurate performance measurement is critical to ensuring correct ROI evaluation.

Furthermore, following extensive interviews and research, it is clear that KPMG Portugal is confronted with the issue of not having a well-established strategy for benchmarking its AI

capabilities against competitors in the Consulting industry. This gap can be traced in part to AI's relatively recent emergence as a key subject in Consulting. To overcome this issue, it is suggested that the company conduct frequent competition benchmarking reviews to guarantee continuous innovation and advancement (Stanford University 2023). Determining the current state of the AI system requires first establishing a performance baseline to later discover areas of improvement and sustain competitiveness, regular monitoring, evaluation, and comparison with industry peers.

In sum, considering the above suggestions, it's crucial to acknowledge that these recommendations are derived from internal discussions and perspectives. Therefore, they might not entirely cover the insights of professionals in this field. Furthermore, a deep-dive analysis of how to implement these suggestions did not take place, they are merely high-level suggestions that KPMG Portugal could explore considering the gaps and challenges identified in the interviews and through benchmark analysis.

Challenges within KPMG Portugal

Driven by a strong commitment to innovation and operational efficiency, KPMG Portugal embarked on an ambitious initiative to integrate Artificial Intelligence within its operational framework. However, this project took place in a setting full of complex challenges.

According to the Consulting partner, two major challenges that arise often in the context of AI adoption are the development of a coherent AI strategy and the scaling of AI initiatives to an industrial level. The absence of a well-defined AI strategy can limit the success of AI adoption, and the transition of AI initiatives from trial to mainstream implementation presents distinct challenges. In this way, KPMG Portugal should prioritise AI initiatives according to their potential impact and viability by starting with projects that have a significant impact, are attainable, and show benefits quickly to generate motivation for additional scaling (BDO 2023).

In addition, the fact that KPMG Portugal is intricately connected to a global network can be a limiting factor when making strategic decisions. For instance, during an interview, the Training department at KPMG Portugal highlighted this very obstacle. They emphasised the dependence on global strategies and decisions for shaping its learning initiatives. The global learning team's decisions regarding the adoption of tools, methodologies, and learning approaches have a profound impact on the direction taken by KPMG Portugal's learning initiatives. This connection ensures that KPMG Portugal adheres to international standards and practices, yet it may limit the flexibility required for tailored AI solutions that cater to unique local market demands and opportunities.

Overcoming Challenges

Despite the challenges and barriers encountered by KPMG Portugal on its AI integration journey, the organisation has successfully addressed and overcome several challenges. These include both general AI challenges and industry-specific barriers found in the Consulting sector. KPMG Portugal's successes demonstrate its capacity to successfully tackle these issues, demonstrating a dedication to ethical, efficient, and innovative AI practices.

Across all interviews, there was a common concern about ethics since fighting bias and stopping the unethical use of AI models are two major challenges in ensuring ethical AI usage. To remove biases and preserve trust, AI models must be continuously moderated and adjusted. Demonstrating KPMG Portugal's commitment to responsible AI deployment, this ethical dimension is essential in tackling possible challenges like content filtering and the harmful use of AI. KPMG Portugal is proactively addressing these concerns through its strategic partnership with Microsoft, which entails the adoption of Microsoft tools meticulously monitored to combat ethical issues and bias. This collaborative effort underscores the organisation's dedication to upholding ethical standards and ensuring that AI is used responsibly and without biases in its learning initiatives.

As previously addressed, data privacy and security are a challenge when adopting AI, and, as a result, KPMG Portugal is actively focused on tackling these issues. As an instance, the KPMG AVA platform provides a safe internal space where employees can ask questions similar to those on open websites, but only in an area that is licenced and available to KPMG Portugal personnel. Furthermore, even when using solutions from tech giants like Google and Microsoft, KPMG implements these tools inside regulated environments to protect sensitive data. The organisation's commitment to strong technical security architecture improves data security even more. By drawing boundaries around protected zones, this design keeps data from leaking into unapproved spaces. It offers the flexibility to design custom cloud solutions tailored to client's specific requirements and data sensitivity.

Regarding the possible challenge of job displacement, all interviewees, and in particular, the Audit Director, underlined the fact that AI is less of a threat and more of an ally. He thinks that rather than replacing employees, AI may improve and assist them when it is incorporated and used effectively. It can boost productivity and free up human time for more difficult creative, problem-solving, and decision-making tasks. He emphasised that the real challenge is to help people understand the benefits of AI and ensure that they see it as a valuable resource rather than a threat to their job security.

Additionally, one of the main obstacles that organisations frequently face when implementing AI is identifying appropriate use cases within their operations. KPMG Portugal stood out in this regard, particularly in 2023. The organisation has shown a remarkable capacity to recognise AI potential and plan for its implementation in advance. This is demonstrated by their partnership with Microsoft, which not only demonstrates their dedication to technology innovation but also demonstrates KPMG Portugal's vision in recognising AI's disruptive potential. Additionally, KPMG Portugal benefits from its integration into the global KPMG network, which facilitates communication among independent firms and streamlines the

adoption of new solutions developed within the network. This collaborative approach allows KPMG Portugal to leverage the expertise and innovations of the global network, making it easier to adopt AI advancements rather than starting from scratch.

Conclusion

KPMG Portugal's technological advancement is being driven by a critical partnership with Microsoft, which has enabled the company to effectively enhance its operational and service delivery framework through the use of Artificial Intelligence. Through this partnership, KPMG has gained access to cutting-edge tools such as Azure OpenAI Service and Microsoft 365 Copilot, which has triggered a new era in client services as well as internally. The firm's audit, tax, and consulting functions have seen a notable improvement in accuracy and productivity with the integration of AI technologies such as Alex, DataSnipper, KPMG Clara AI, and KPMG AVA. This represents a noteworthy advancement towards the integration of AI into critical business processes.

This journey, however, was not without its challenges. The necessity for a strategic identification of improvement areas, ethical issues in AI usage, and maintaining data privacy and security were listed as key areas. The proactive approach taken by KPMG Portugal to these problems, particularly in ethical AI deployment and data protection, demonstrates the firm's commitment to responsible AI adoption.

KPMG Portugal's adoption and integration of AI demonstrate that its commitment to AI has just begun. The initial achievements in incorporating AI into its business practices show a potential for significant advancement over time. As the journey progresses, it's conceivable that the organisation will not only refine its current operations but also pioneer new ways of working that could set a benchmark in the professional services industry. The early success in adapting to AI technologies signals a promising future, one where KPMG Portugal could lead in shaping the long-term landscape of AI in Consulting.

Cross-industry Patterns - Comparative Analysis

In this chapter, the objective is to undertake a comprehensive cross-industry analysis of the organisations' strategies, challenges, and opportunities, along with providing a comparative analysis of how AI adoption is progressing inside the featured firms. By bridging the gap between these industries, this dissertation hopes to facilitate the exchange of valuable insights and foster a collaborative mindset as a way to augment the adoption and efficacy of AI practices.

Methodology

The approach used for this cross-industry analysis focused on eight critical parameters that were considered to be essential to understanding the adoption of AI in the featured companies. These parameters - AI Investments, AI Adoption Rate, AI Ethical Compliance and Data Privacy, AI Strategic Alignment, AI Transparency Level, AI Training, AI Talent, and Technological Novelty - were carefully selected as, according to research, they are among those that contribute to a successful adoption of AI. Such factors cover whether the companies have AI initiatives that are in line with desired business results (Omeyer 2023), are hiring and developing skilled employees and teams (IBM 2020) and establishing transparent policies and data security safeguards (Vaghashia 2023), among other key to success elements discovered during the research process.

Additionally, these are the parameters that were commonly discussed in the conducted interviews. Through the selection of parameters that are emphasised in the literature and, at the same time, highlighted in the interviews, this analysis is driven by both theoretical frameworks and practical experiences. Nevertheless, it is crucial to recognise that while these parameters provide a solid foundation, they might not cover all aspects of a complex AI adoption. Therefore, the chosen parameters in the analysis should be viewed as representative rather than fully comprehensive in capturing the entirety of each AI implementation.

The methodology chosen to assign each organisation a score (from 1 to 5) for each parameter required a detailed qualitative assessment based on a combination of criteria. Firstly, an analysis of publicly available information, such as papers, news, and financial reports regarding the companies under consideration. Additionally, insights obtained from the interviews also played a significant role in assisting the scoring process. Therefore, the scores assigned were the result of a careful assessment, discussions among the authors, and benchmarking, guaranteeing a contextualised study of the businesses' implementation of AI. For this purpose, the cross-industry comparison scoring stipulated by the authors is explicitly represented in Figure 6.

Analysis

The parameter AI Investments represents the organisations' financial commitment to integrate AI into their operations. The investments incurred by Accenture and KPMG were quite similar. In 2023, Accenture announced a $3 billion investment in its Data & AI and KPMG a partnership with Microsoft worth $2 billion. These two investments translate the dimension of these two companies within the Consulting industry and are two clear representatives of the power the Consulting companies may hold. Additionally, Mercer may not be considered to be running at the same pace as the two consulting firms but has made strong efforts in the integration of AI within its operations. The major difference is that Mercer does not hold the same purchasing power as Accenture or KPMG, so it cannot be considered at the same level. Instead, Mercer developed many of their AI tools in-house, without needing to establish partnerships or outsource many of their AI platforms or instruments. On the other hand, Banco de Portugal is still far behind due to its conservative and prudent approach, not only because of its internal structure and organisation but also due to legal reasons, which can create a significant barrier when investing in AI.

Moreover, it is pertinent to strike a middle path between the corporation's actual use of AI tools and their availability. The AI Adoption Rate KPI assesses how well AI tools are daily incorporated into the employees' operations. Accenture, KPMG, and Mercer exhibit comparable postures in the adoption of AI, distinguished by their dedication to customising AI solutions to satisfy the distinct requirements of diverse departments. Notably, KPMG has created its own proprietary ChatGPT technology, although Accenture and Mercer both use ChatGPT in their day-to-day business operations. Their proactive strategy demonstrates their commitment to realising the revolutionary potential of AI. Banco de Portugal lags behind these sector leaders, but there are a few departments within the bank that use AI tools, which for a Central Bank represents a significant step forward towards a future of AI integration within their activities. This disparity emphasises how important corporate culture and incentives are in determining how AI adoption turns out, although the industry setting is the most significant factor.

Ensuring Ethical Compliance and Data Privacy in Artificial Intelligence entails adhering to moral norms, which includes protecting sensitive information from unauthorised access or manipulation, as well as maintaining data security and integrity. The achievement of ethical compliance poses significant challenges, especially during the early stages of AI adoption and implementation. Banco de Portugal takes a leading role, as the institution prioritises information sensitivity through the implementation of robust procedures, stringent compliance measures, and a proactive stance towards AI-related threats. This underscores a distinct commitment to data privacy and security, thus a score of 5 was assigned by the authors. Following closely behind, Mercer, Accenture, and KPMG each assigned with 4-point rating. Mercer addresses ethical concerns in AI through initiatives such as pre-access training, bias detection methods, and a focus on responsible use. Notably, Mercer places special emphasis on mitigating user concerns related to AI-generated content, aligning with a user-centric ethical

framework. Accenture, recognised for its elevated commitment level, emphasises ethical AI deployment by prioritising justice and accountability and implementing rigorous data protection measures, including encryption and regulatory compliance. KPMG's strategic collaboration with Microsoft establishes a foundation for secure platforms prioritising data privacy. However, KPMG's ethical rating is compromised due to lingering challenges in addressing unconscious biases in AI tools. Overall, the assigned rankings demonstrate a shared dedication to ethical compliance and data protection in the environment of AI adoption.

Strategic Alignment refers to the process of structuring a company and allocating resources in a way that supports a given strategy, in this case, AI adoption. In this respect, it is evident from Figure 6 that all of the institutions have solid internal processes in place that underpin their respective AI strategies. Accenture and Mercer were considered to be the most successful in this regard (5 points): Accenture mobilises its resources to place AI as the centerpiece of its fundamental pillar in creating value for all stakeholders through its strong focus on technology services. In the same way, Mercer's prioritisation of its core strategy of democratising AI across all employees is reinforced by large projects directed by highly specialised teams, which have a direct impact across the entirety of its activities. KPMG and Banco de Portugal also place great emphasis on aligning AI in their long-term strategies but not to the same degree as the previously mentioned companies (4 points). KPMG for instance has not yet implemented a system capable of measuring the impact of its AI practices, a vital element that ensures a solid AI strategy. Banco de Portugal, although focused on increasing its technological capacity through the use of AI, has a primary mission to ensure price stability. In this context, not every department is fully committed to leveraging AI to fulfil this mission.

Transparency in AI adoption involves openly discussing and disclosing information regarding AI rules, methods, and decision-making processes. Banco de Portugal emerged as a leader in this realm, assigned with the highest possible feeby the authors. They employ a transparent

SupTech solution for automated credit checks, prioritising compliance, and security. Mercer also excels in transparency reaching a 5 points rating. The company actively maintains transparency by subjecting its AI model, LenAI, to rigorous reviews. Additionally, it utilises methods like bias audits and content review with another AI model to augment transparency and instil confidence. KPMG, while suggesting transparency, has room for improvement. Establishing a specialised AI/ML unit with clear Key Performance Indicators (KPIs) could enhance their transparency efforts, as well as improve communication. Accenture, on the other hand, was assigned 3 points by the authors: While they implement transparency guidelines, these are not explicitly communicated to all stakeholders, indicating potential communication gaps. Overall, fostering increased openness is imperative for the ethical deployment of AI.

AI Training in companies involves educating and preparing employees to understand, apply, and utilise Artificial Intelligence. This training initiative seeks to provide employees with the understanding and competences needed to employ AI for the benefit of the business. All four companies acknowledge the importance of AI training for their workforce. However, a few differences have been identified. Accenture insights particularly identified a need for practical usage training, whereas KPMG, Banco de Portugal, and Mercer insights highlighted the development of training programmes that stress hands-on experience with each tool's capabilities over academic understanding. For instance, Banco de Portugal provides an online portal that allows workers to browse constantly updated internal training alternatives, sign up for courses, and request training with external organisations. Other extensive training programmes, including workshops, are developed by Mercer and KPMG to improve employees' AI capabilities. Nonetheless, while Accenture lags due to a perceived lack of training by its employees (3 points assigned), the other firms continue to hold the capability to advance (4 points). Taking into account the continuously developing nature of this industry,

adequate and up-to-date training in AI technology is never enough, thus businesses must always ensure their employees have the necessary abilities to succeed.

The AI Talent parameter encompasses two critical aspects: firstly, having a workforce with specialised skills in the field of AI, including data scientists and AI specialists; and secondly, guaranteeing that all workers are willing to embrace the transformative journey of AI. This talent pool is critical for remaining competitive in the industries covered in this thesis.

Figure 6 shows that, according to the authors, Accenture and Mercer outperform this indicator. Both organisations employ AI-interested and motivated individuals while offering various initiatives to assist employees in adapting to the changing nature of their industries, such as Accenture's "Solutions.AI for Talent & Skilling" project. Furthermore, as previously stated, Accenture intends to grow its AI team to 80,000 individuals, while Mercer has specialised teams such as Mercer Digital. KPMG, on the other hand, revealed not having a team dedicated to dealing with AI (3 points). Even though its employees are ready to accept the AI-changing nature, no team has been formed to focus on it.

Due to the large representation of older technicians and managers with lower technological skills, Banco de Portugal is at the bottom of the ranking (assigned with 2 points). Because these employees may be more hesitant to accept full-scale innovation, quick AI adoption may be compromised. While every company recognises the importance of AI talent, the variance in rankings and strategies illustrates the different degrees of preparedness.

Finally, Technological Novelty refers to the level of advanced technology that is currently in use in each organisation. From Figure 6 it is possible to derive that apart from Banco de Portugal (2 points assigned), all other firms possess relatively advanced technology at their disposal (4 points). This is mainly due to the nature of the consultancy companies that specialise in providing services to clients. In contrast, Banco de Portugal, being the main supervisory authority in Portugal, carries a greater degree of responsibility. Thus, regarding

regulation and compliance, it is much more restricted when it comes to the level of advanced AI it can employ. For instance, consultancy companies already use Gen AI not solely to aid their clients finer but also to boost internal operational processes. However, it is essential tp understand that most state-of-the-art technologies are employed through strategic partnerships, namely from tech giants like Microsoft and OpenAI. However, this advantage comes at the cost of a certain dependency on these cutting-edge companies. For this reason, a level of technological novelty of 4 points was considered the most appropriate by the authors. Conversely, Banco de Portugal is lagging in this domain given that, at present, Gen AI has not been implemented. Most AI solutions are developed in-house instead of being outsourced, due to security reasons. This limits the innovative potential of its solutions.

In essence, the comparative analysis of AI adoption represented in Figure 6 highlights the distinct approaches across the four featured companies. One notable aspect is the substantial AI investments made by Accenture and KPMG, reflecting their industry influence, while Mercer demonstrates a higher commitment to in-house AI development and Banco de Portugal is more constrained by conservatism and legal considerations. The AI adoption rates highlight a commonality among Accenture, KPMG, and Mercer, emphasising the customisation of AI solutions to meet diverse departmental needs. Despite lagging, Banco de Portugal showcases slow but steady progress.

Ethical compliance emerges as a critical factor, as all companies demonstrate strong commitments to ethical AI use, implementing measures to ensure responsible use and overcoming biases, especially in Banco de Portugal. Moreover, the four companies place significant value on strategic AI alignment, making it a fundamental pillar of their strategy. Transparency in AI deployment is also critical, with Banco de Portugal and Mercer leading the way. Despite implementing transparency guidelines, Accenture and KPMG may need to improve certain transparency components. Furthermore, although AI training is a metric that

can be improved in all firms, it is considered as a highest primacy by all of them. The AI talent parameter positions Accenture and Mercer as leaders in this topic, whereas KPMG and Banco de Portugal face some challenges, such as lacking a dedicated AI team. Finally, technological novelty is examined: consultancy firms leveraging advanced technology through strategic partnerships highlight a potential road for collaboration between industries.

Looking forward, the featured industries could further explore cooperative initiatives to unlock unexplored opportunities. For instance, the methodology and goals of Accenture and KPMG, which have excelled in significant AI investments, could encourage Mercer to investigate other funding models or Banco de Portugal to see the benefits of doing so. Mercer's commitment to in-house development, in turn, may inspire others to consider boosting their AI capabilities through more proprietary solutions. Conversely, Banco de Portugal's leadership in ethical compliance and extensive procedures can offer valuable insights for Mercer, Accenture, and KPMG to improve their ethical frameworks.

Fostering a culture of shared experiences and best practices in the rising AI landscape can lead to collective industry growth, addressing common challenges and seeking innovative routes. The economy as a whole may evolve more dynamically by taking advantage of each company's strengths and learning from their distinct approaches. Overall, the analysis suggests that, while the four firms are currently making remarkable progress in AI adoption, there is still untapped potential that can be unleashed through cross-industry collaboration. Implementing a synergetic mindset benefits not only these specific companies and industries but also establishes foundations for a more robust AI ecosystem on a larger scale.

Final Conclusions

The growth of Artificial Intelligence in the past few years has positioned itself as a disruptive force in business. However, a notable gap in the literature is the lack of comparative analysis across industries, making it difficult to identify common patterns, best practices, and lessons

applicable globally. Given this gap, answering the research question “How Does Artificial Intelligence Adoption Differ Across The Consulting, Banking And Human Resources Sectors?” is critical and acted as this thesis's focal point. The examination of AI adoption across the highlighted industries concludes that there is a considerable difference in the organisations' strategic approaches, investment levels, and operational adjustments to AI technology.

The overall research made on AI integration across diverse industries reveals a context marked by both transformative potential and significant challenges. Consulting companies, such as PwC, EY, and McKinsey, are rapidly adopting AI technologies to obtain a fierce edge. The promise of AI in Banking is significant, but the sector confronts challenges such as limited infrastructure and a possible employee aversion to AI. Human Resources exhibits substantial advances in AI applications, with major players such as IBM and Oracle leveraging AI to accelerate talent acquisition and employee engagement. Overall, AI integration presents a variety of trials and triumphs, necessitating collaborative efforts and proactive solutions.

Beyond the preliminary research, each individual section draws findings about the specific industries. In the Consulting sector, Accenture stands out for its strategic investments, key partnerships, and client-centric AI applications that emphasise innovation and adaptability. The focus on empowering clients, especially in Operations, offers more tangible advantages. KPMG Portugal, within the Consulting and Auditing domain, highlights the transformative influence of AI on operational frameworks, showing improvements in productivity through technologies such as K-City and KymChat. The firm has integrated AI technologies into audit, tax, and consultancy tasks, increasing accuracy. Consequently, through these leaders in the field, the Consulting industry demonstrates the potential to integrate AI on a wide scale by investing heavily in the technology.

In contrast, Banco de Portugal, representing the Banking industry, takes a cautious strategy that prioritises stability, and information security through strict regulatory compliance. This

national supervisory authority uses AI mainly to improve process efficiency. Despite apparent investments and beneficial impacts on business units, AI adoption is slowed by rigid security norms, an elderly workforce, and inefficiencies in outsourcing. In terms of ethical compliance, Banking ranks first and sets the bar for the other fields analysed. This caution, driven by legislative constraints, shows the influence of industry-specific components on AI integration. The Human Resources industry, represented by Mercer, emphasises operational efficiency and innovation. Moreover, with a focus on internal AI development, Mercer is a prime example of a creative and tailored approach to AI that adapts to its operational objectives and budgetary constraints. The company focuses on democratising AI and addressing workforce qualifications, establishing a standard for responsible and meaningful integration.

Finally, to conduct a fair cross-comparison analysis, the last chapter conducted an in-depth study of eight key variables to determine how these organisations are navigating the landscape of AI integration. By examining each organisation using these criteria, a deeper learning emerged, allowing for a more objective judgement of their efforts.

In summary, the findings indicate that Consulting prioritises efficiency and client solutions, whereas Banking proceeds carefully with a focus on compliance, and HR stands out for strategic AI integration available to all employees.

According to this chapter's analysis, even though every organisation is efficiently adopting AI at its pace, there is still a lot of unrealised potential that may be reached by collaborating across industries. For example, HR entities' dedication to in-house development may motivate others to consider expanding their AI capabilities through similar exclusive solutions. In contrast, the Banking leadership in ethical compliance can provide significant insights to others. Such initiatives could lead to collective industry growth, address common difficulties, and pave the way for innovative solutions.

In the current context of technological evolution, collaboration amongst major players such as Accenture, KPMG, Banco de Portugal, and Mercer is key to achieving the full potential of AI. As they exchange insights and tactics, the synergy of collective intelligence boosts an entire network towards a future where innovation knows no bounds.

Limitations

The goal of this section is to outline the parameters that our findings fall inside and the consequent limitations of the study.

The first limitation is derived from the fact that the four companies under examination do not fully represent their whole industries. While the study's research question, “How does Artificial Intelligence adoption differ across the Consulting, Banking, and Human Resources sectors?” suggests a broad analysis, it is critical to recognise its inherent limitation in scope. Given that the study focuses on four sample organisations within the specified sectors, the findings may not fully represent the landscape of the Consulting, Banking, and Human Resources industries. Readers must recognise the scope of this study as a concentrated assessment of select industry players rather than an in-depth representation of the whole sector.

Another constraint arises from the geographical bias in the interviews. Notably, our methodology exhibited variability across the companies under consideration. Mercer, for instance, was subject to a comprehensive global investigation due to a scarcity of insights obtained exclusively from a Portuguese viewpoint. On the other hand, Banco de Portugal's analysis is confined to a domestic scope, given the company's exclusive operations within Portugal. Regarding Accenture and KPMG, while their investments and partnerships were examined on a global scale, the analysis of their applications and impact remained primarily centred on the Portuguese context. These intricacies emphasise the importance of contextual awareness when interpreting our findings and recommendations.

The third constraint of the study is related to the relatively small number of employees that were interviewed. While using a survey may have yielded a more substantial sample size, the choice to utilise in-depth interviews was deliberated as it was intended to gather personal insights and detailed justifications that might have been overlooked in a broader survey. Thus, the sample size limitations and the possibility that the results do not fully represent general perspectives should be considered. Furthermore, certain sensitive data concerning investments, partnerships, technologies implemented, and other confidential information have been omitted in compliance with the companies' privacy requirements.

Moreover, the nature of the recommendations given in the paper poses a constraint. While the four of us were engaged in collaborative discussions to address the current gaps and challenges in the studied companies, the absence of external expert consultation should be acknowledged. As a result, the recommendations presented are an outcome of internal discussions, and as such, they may lack the deep insights that experts in this field could offer.

Within the context of the cross-comparison analysis presented, it is crucial to recognise three inherent restrictions that influence the comprehensiveness of our findings. First, while the parameters were carefully chosen based on recent research and perspectives from the interviewees, they might not fully capture the complexity of the AI adoption environment. Second, as interpretations may vary across researchers, the qualitative aspect of the assessment adds an intrinsic degree of subjectivity. While offering an organised method, the usage of a scoring system still depends on subjective decisions and benchmarking discussions, which raises the possibility of bias. Finally, the analysis only represents a single point in time due to the dynamic changes that occur within organisations and the nature of AI. As Artificial Intelligence evolves, companies might experience changes that are not captured in our analysis. Given that the analysis could not have captured all the aspects of the organisations' AI adoption journeys, these limitations highlight the need for a cautious interpretation of the results.

Future Work

This chapter serves as a guide for potential new research that can complement our study's scope. We aim to encourage future researchers to build upon the foundations laid throughout the preceding chapters, not only potentially deepening the knowledge around the topic but also extending the scope and broadening the discussion.

Additional investigation might look into how the aforementioned synergies could be put into action. One possible approach is to form cross-disciplinary teams, bringing together experts with broad experience from each field and ensuring that cross-industry collaborations open up untapped potential. Also, another path could be creating collaborative platforms, workshops, or conferences that promote knowledge exchange, as knowledge-sharing is an essential activity for the exchange of expertise, skills, or information among various stakeholders such as individuals, communities, or organisations (Mathrani and Edwards 2020).

Moreover, further studies could address how AI is reshaping other industries that were not explored in this dissertation. For instance, AI is speeding up the energy transition in several domains including renewable energy forecasting and grid operations and optimisation, just to name a few. This technology, which has been little explored, can be deployed at scale faster than hardware infrastructures (World Economic Forum 2022). In retail, one could explore how Artificial Intelligence provides businesses with an edge over competitors. Automating repetitive tasks and optimising supply chains by monitoring the stock level are some of the potential use cases, which ultimately reduce costs and increase profitability (World Economic Forum 2023). Regarding healthcare, it is expected that by 2030, AI algorithms will be capable of detecting and anticipating diseases and suggesting preventive measures. Furthermore, reduced waiting times and more streamlined staff workflows are other benefits that AI brings to the table (World Economic Forum 2020).

Finally, another relevant future research direction to explore could be further AI-related technologies such as Peer-to-Peer Networks (P2P) like Blockchain, Virtual Agents in the spectrum of conversational AI, Decision Management, and many more.

To conclude, it is evident that the number of topics to explore is almost limitless. Considering this, our thesis aims to spike curiosity among scholars by urging them to recognise this urgent theme that is profoundly shaping the business landscape.

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Appendix

Figure 1. Core AI Practices in Place at Companies

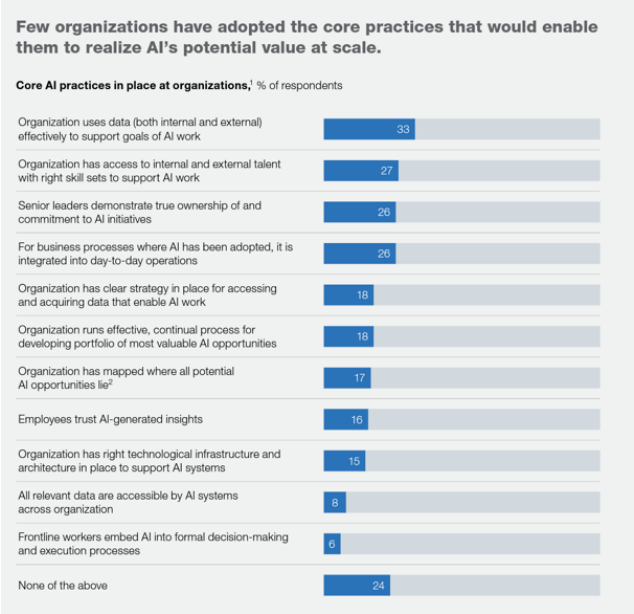
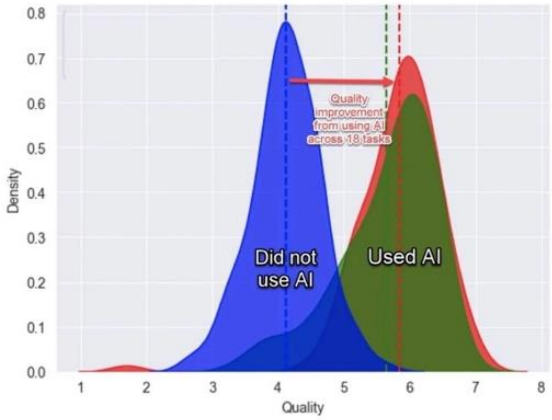


Figure 2. Impact of AI on Employees in the Consulting Industry



Distribution of output quality across all the tasks. The blue group did not use AI, the green and red groups used AI, the red group got some additional training on how to use AI.

Figure 3. Median AI Maturity Index by Industry

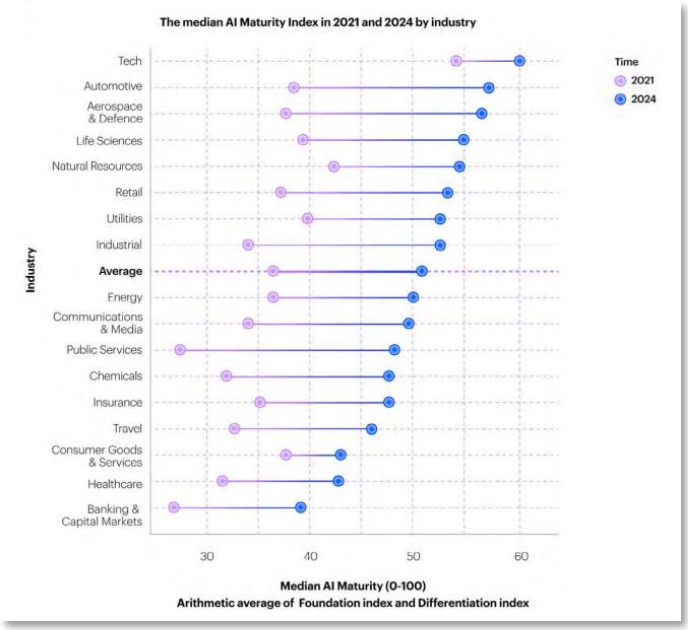


Figure 4. AI Benefits

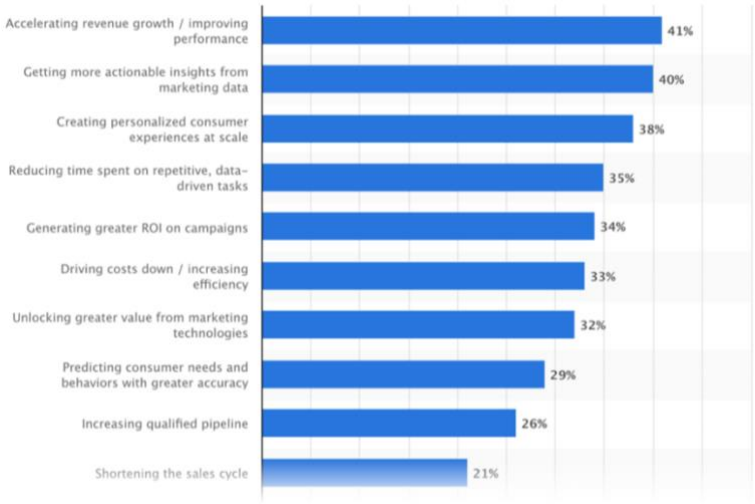


Figure 5. Time by Task: HRBP versus AI and Automation

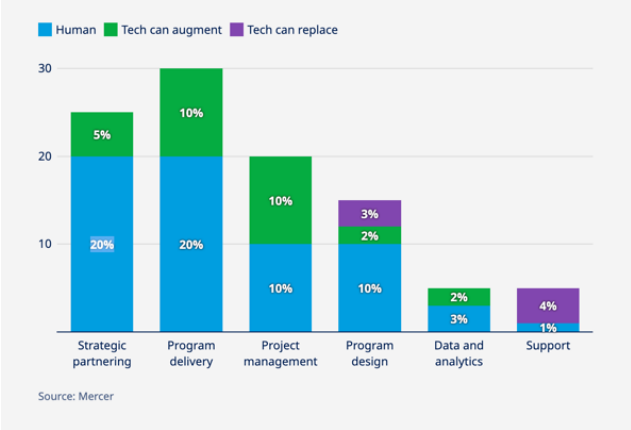


Figure 6. Cross-Comparison Analysis KPIs

KPIs	1	2	3	4	5
AI Investments			BANCO DE PORTUGAL	Mercer	KPMG accenture
AI Adoption Rate		BANCO DE PORTUGAL		KPMG accenture Mercer	
AI Ethical Compliance and Data Privacy				KPMG accenture Mercer	BANCO DE PORTUGAL
AI Strategic Alignment				KPMG BANCO DE PORTUGAL	accenture Mercer
AI Transparency Level			accenture	KPMG	BANCO DE PORTUGAL Mercer
AI Training			accenture	KPMG BANCO DE PORTUGAL Mercer	
AI Talent		BANCO DE PORTUGAL	KPMG		accenture Mercer
Technological Novelty		BANCO DE PORTUGAL		KPMG accenture Mercer	