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The Impact of Digital Transformation on Accounting, Financial, and Tax Reporting: Evidence from a Leading Portuguese Professional Services Firm

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M

2026

FEP FACULDADE DE **ECONOMIA E GESTÃO**

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Internship report
Master in Management

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2026

Acknowledgements

The writing of this internship report marks the conclusion of a demanding yet deeply rewarding journey. None of it would have been possible without the support and contribution of those who stood by me along the way and helped me pursue one of my greatest goals, to whom I would like to express my sincere gratitude.

Firstly, I would like to express my deepest appreciation to my supervisor, Professor Elda Marques, for her trust and guidance throughout this process, which were essential to the development of this report. I am equally grateful for the encouragement she provided over the past months, helping me conduct this study with confidence.

I would also like to sincerely thank my internship supervisor at PwC Portugal, Diana Jesus, for her support and unfailing availability throughout my time at the firm, and for the opportunity to grow both professionally and personally.

I am also deeply grateful to my friends who walked alongside me throughout these past five years, turning this academic journey into something truly memorable. A special thanks to Francisca and Maria, for always standing by me and helping me navigate this process with confidence and ease. To my lifelong friends, Carolina, Lua, and Babo, thank you for more than a decade of friendship, constant support, and for always being there, no matter the circumstances.

To Daniel, a special thank you for standing by me every step of the way, offering patience, comfort, and unwavering support throughout this process. Thank you for celebrating every small victory alongside me, and for helping me grow into a better version of myself.

To my family, my deepest gratitude for making this journey possible. I am truly thankful to my parents for every opportunity and sacrifice made on my behalf, and for believing in my potential at all times. To my sister, I am grateful for always being a role model to look up to, and for giving me the drive to continuously improve. Together, their unconditional support shaped the person I am today, giving me the determination and confidence to pursue my ambitions and face every challenge with resilience.

With sincere gratitude, thank you all.

Abstract

Digital Transformation (DT) has been one of the most disruptive trends in the business world over the past decade. Accounting is among the most affected professions, with emerging technologies transforming data collection and analysis, decision-making, compliance, and reporting. The purpose of this study is to assess how emerging technologies have changed accounting, financial, and tax reporting workflows, along with their benefits, challenges, and best practices, focusing on a leading Portuguese professional services firm. The study follows an explanatory sequential design. A 43-item questionnaire was disseminated among 335 professionals from PwC Portugal's Finance & Accounting and Tax Compliance Managed Services team, resulting in a final sample of 98 respondents after screening. Six semi-structured interviews were then conducted with professionals across hierarchical levels to deepen the survey findings.

The findings reveal that the strongest perceived DT impacts are process efficiency, skill disruption, and the evolution of the professional role. Perceptions differ significantly by job position, with greater optimism at higher hierarchical levels. Qualitative findings identify lack of available time as the primary adoption barrier, along with governance restrictions, licensing costs, and risk aversion. Additionally, professionals expect a shift in their roles from execution to advisory functions, although concerns emerge that critical thinking may be lost as automation increases.

These findings contribute to existing knowledge on DT within large Portuguese enterprises in three ways. First, by identifying the main constraints of DT within a large firm, it helps other Portuguese firms identify priority areas when implementing digital solutions. Second, the study identifies effective adoption practices already validated within a Big Four context and applicable to other firms. Third, it sheds light on an under-researched country and integrates perspectives across hierarchical levels, addressing two gaps identified in prior literature on the impact of DT on accounting and tax practices.

Keywords: Digital Transformation; Artificial Intelligence; Accounting; Tax reporting; Portugal

JEL-codes: M41; O33

Resumo

A Transformação Digital (TD) tem sido uma das tendências mais disruptivas do mundo empresarial na última década. A contabilidade está entre as profissões mais afetadas, com as tecnologias emergentes a transformar a recolha e análise de dados, a tomada de decisão, o cumprimento fiscal e o reporte. O objetivo deste estudo é avaliar o impacto destas tecnologias na contabilidade e no reporte financeiro e fiscal, bem como os seus benefícios, desafios e boas práticas, com foco numa empresa líder de serviços em Portugal. O estudo segue um design sequencial explicativo. Foi aplicado um questionário de 43 itens a 335 profissionais da equipa de *Finance & Accounting and Tax Compliance Managed Services* da PwC Portugal, obtendo-se 98 respostas válidas. Posteriormente, realizaram-se seis entrevistas semiestruturadas a profissionais de diferentes níveis hierárquicos para aprofundar os resultados do questionário.

Os resultados revelam que os maiores impactos percebidos da TD são a eficácia de processos, a transformação de competências e a evolução do papel profissional, com maior otimismo nos níveis hierárquicos superiores. Os resultados qualitativos identificam a falta de tempo como principal obstáculo à adoção, seguida de governance, custos de licenciamento e aversão ao risco. Os profissionais antecipam uma mudança das funções de execução para consultoria, embora existam preocupações de que o pensamento crítico se possa perder com a automação.

Estes resultados contribuem para o conhecimento sobre a TD em grandes empresas portuguesas de três formas. Primeiro, identificam as principais limitações da TD numa grande organização, ajudando outras entidades a definir áreas prioritárias na implementação de tecnologias. Além disso, identificam práticas eficazes de adoção já validadas num contexto Big Four e aplicáveis noutras firmas. Por último, o estudo incide sobre um país pouco estudado e integra perspetivas de diferentes níveis hierárquicos, abordando duas lacunas identificadas na literatura sobre TD na contabilidade e na área fiscal.

Palavras-chave: Transformação Digital; Inteligência Artificial; Contabilidade; Reporte fiscal; Portugal

Códigos JEL: M41; O33

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1. Introduction

In recent years, the discussion around Digital Transformation (DT) has exponentially grown worldwide. This rise in global interest is emphasised by a 2020 estimate indicating that, in the following decade, approximately three-quarters of the world economy's value creation will derive from highly digitalised sectors (Januszewski & Pietrysiak, 2025). Emerging technologies, such as Artificial Intelligence (AI), have progressed considerably, impacting the way companies function (Li, 2026). The Future of Jobs Survey indicates that, among nine key technology trends, 86% of employers expect AI and information processing to impact their businesses the most, between 2025 and 2030 (WEF, 2025).

The rapid adoption of emerging technologies across industries fostered multidisciplinary research. According to Durão et al. (2019), Digital Transformation (DT) is a dynamic process that integrates both technology and strategic planning, involving every aspect of a business, from its processes to its culture. It consists of adopting emerging technologies such as Artificial Intelligence (AI), Robotic Process Automation (RPA), and Cloud computing, which play a pivotal role in reshaping business functions (Zhang et al., 2020). While previous studies highlight gains in efficiency and effectiveness as the major benefits of technology adoption in accounting and tax practices, they also identify challenges related to skill disruption, cybersecurity and data privacy, high implementation costs, and regulatory gaps (Guglyuvatyy, 2025; Sampaio & Silva, 2025).

Although there is considerable research detailing how DT is redesigning accounting, financial, and tax reporting practices, the real impact of technology adoption in accounting remains vague (Gonçalves et al., 2022). Concerning human capital, existing research mainly focuses on the perceptions of high-ranking professionals, leaving non-managerial roles largely unexplored. There is also a lack of depth regarding management practices designed to cope with resistance to change and a dynamic regulatory environment. The following gap is contextual. While previous research covers countries such as China, the United States, Saudi Arabia, and Poland, Portugal remains largely unexplored.

Building on these gaps, this study aims to further explore how DT is affecting accounting and tax practices, in the context of a large Portuguese services firm. Aligned with this objective, the study seeks to answer the following main research question:

How is Digital Transformation affecting accounting, financial, and tax reporting practices in a large Portuguese professional services firm?

To address this question, the empirical analysis is guided by four supporting research questions:

RQ1: *What are the main perceived impacts of DT on accounting, financial, and tax reporting practices?*

RQ2: *To what extent do these perceived impacts differ by job position and years of experience?*

RQ3: *What challenges and concerns do professionals face when adopting digital tools in their work?*

RQ4: *How do professionals perceive the impact of DT on the future of their roles and required skills?*

The research uses a mixed methodology, combining both qualitative and quantitative approaches. It was complemented by an internship within the Managed Services team at PwC Portugal, one of the world's leading professional services firms. A questionnaire was disseminated to assess professionals' perceptions of the impacts of technology adoption. To conclude, semi-structured interviews were conducted with selected team members to further explore the insights obtained from the survey.

This study enriches previous research by providing evidence on the impact of DT on accounting, financial, and tax reporting within a large Portuguese services firm. As large enterprises tend to be leaders of innovation (Gonçalves et al., 2022), the findings may motivate other businesses to adopt digital tools. Similarly, it may lead regulators to further reinforce digital development, potentially increasing technology adoption nationally. The third contribution is methodological, as it integrates survey responses and semi-structured interviews, complemented by insights from the internship context.

This internship report is structured as follows. First, the internship context is presented, including an overview of the company and the activities performed. The second chapter provides a comprehensive literature review on the research topic, addressing the theoretical foundations relevant to the study. The following chapter provides a description of the methodology employed. Then, the findings are presented, and subsequently analysed and discussed in light of the existing literature. Lastly, the conclusion outlines the main contributions and limitations of the study, along with suggestions for future research.

2. The Internship

In this chapter, the context of the curricular internship that serves as empirical evidence for this study is presented. This three-month internship was developed within the Finance & Accounting and Tax Compliance Managed Services team at PwC Portugal. The following sections present an overview of the firm, along with the objectives and activities performed throughout the internship period, from February to April 2026.

2.1. PwC Portugal

PricewaterhouseCoopers International Limited (PwCIL) is one of the world's leading professional services networks, commonly referred to as one of the "Big Four". Headquartered in London, United Kingdom, the network covers 137 countries, with over 364,000 professionals worldwide. As of 2025, the network reported global revenues of 56.9 billion USD, a 2.9% increase from the previous year. PwC Portugal is a member firm that has maintained a strong presence in the country for over 60 years, currently employing approximately 3,000 professionals across Lisbon, Porto, Coimbra, Funchal, Luanda, Praia, and Maputo. The network offers solutions across three main service lines: Assurance, Advisory, and Tax. Additionally, it competes for large-scale projects and multinational clients across sectors such as financial services, technology, consumer markets, and healthcare, leveraging both its local presence and the international capabilities of the network. Within the Tax service line, PwC Portugal is positioned as the national leader in tax advisory services, with solutions ranging from tax reporting and strategy to tax technology. Globally, Tax and Legal services reached 12.7 billion USD in revenues, reflecting a growth in client demand. The firm incorporates several specialised entities, including PricewaterhouseCoopers/MFAS – Management, Finance & Accounting Services, Lda. (PwC MFAS), which focuses on accounting, finance, and tax compliance services.

This curricular internship was carried out within the Finance & Accounting and Tax Compliance Managed Services team, operating under PwC MFAS. Managed Services (MS) emerged as a response to digital evolution, representing a modernisation of the traditional outsourcing model towards a more technological, scalable, and integrated approach. It was created in search of greater operational efficiency, driven by the need for automation, increasing regulatory requirements, growing accounting and fiscal complexity, and a lack of

specialised talent. It is structured around three pillars: Finance & Accounting MS, Tax Compliance MS, and Human Resources MS. The team's main objective is to partially or fully assume specific client functions, enabling them to fully focus on their core business operations.

The network's mission includes accelerating Digital Transformation (DT) by investing in organisational and scaling AI capabilities, through strategic partnerships, including with SAP, Oracle, Microsoft, Google Cloud, Anthropic, and OpenAI, having invested over 3.1 billion USD up to 2025 across areas such as AI and technology and business strategy. This is reflected in the development of tools such as ChatPwC, PwC's internal AI platform that integrates multiple models from top providers, including OpenAI, Anthropic, and Google, such as GPT 5.1, Claude, and Gemini, along with specialised AI agents, and Microsoft Copilot, an AI virtual assistant integrated across Microsoft 365 applications. Both platforms operate in secure environments, ensuring confidential client information remains protected. Overall, the alignment between PwC Portugal, particularly the MS team, and technological development makes it a solid ground for researching the impact of DT on accounting, financial, and tax reporting.

2.2. Activities Performed

The primary objectives set by PwC for the internship were to reflect on the current context of DT, particularly its impact on day-to-day operations of the firm's finance and tax areas, and to identify which tasks are most affected and in what ways. For this purpose, the firm provided guidance from professionals with accounting expertise and strong proficiency in digital tools, as well as access to the technologies used internally.

The Finance & Accounting dimension focuses on outsourced accounting services, including monthly closings, reconciliations, financial statement preparation, financial reporting, and process optimisation. The Tax Compliance dimension covers services such as the preparation and submission of tax returns, tax planning and strategy, risk assessment, and tax reporting. The activities described below were performed in the context of two different projects: one involving a company operating in the industrial sector and another in the private equity sector. Working across two distinct client organisations provided a valuable understanding of how accounting and tax compliance processes vary across industries, each presenting distinct regulatory and reporting requirements.

On a monthly basis, as part of the closing process, vendor, purchase, and general journal entries were recorded in Microsoft Dynamics NAV, an Enterprise Resource Planning (ERP) system that centralises financial information and automates accounting processes. Vendor and purchase journal entries were used to register supplier-related transactions and purchase invoices associated with the acquisition of goods and services, ensuring liabilities, expenses, and VAT amounts were accurately allocated. The general journal was used for accounting adjustments, such as accruals and deferrals. This process involved collecting, verifying, and organising all accounting documents issued or received by the client during the previous month before recording the journal entries. Overall, NAV significantly reduces the time required for accounting processing and minimises the risk of human error, as it automates debit, credit, and VAT calculations, and automatically updates several accounting records, thereby facilitating closing processes. Nevertheless, the collection, verification, and validation of documents remain highly dependent on manual intervention and professional judgment.

Account reconciliation was also performed monthly and involved comparing the balances recorded in the accounting system with external sources, such as bank statements, supplier statements, and the *E-Fatura* portal, to identify and resolve any discrepancies. The *E-Fatura* portal, maintained by the *Autoridade Tributária e Aduaneira (*AT), the Portuguese tax and customs authority, allows companies to consult all invoices issued and received under their tax identification number. As the portal limits downloads to 100 invoices at a time, an automated invoice extraction tool developed by PwC's Digital Transformation team was used, enabling the autonomous extraction of all invoices for a given period, significantly reducing the time associated with manual data collection and minimising the risk of omissions. Support was also provided in the preparation of monthly tax and financial reports, which entailed consolidating each client's financial and fiscal information for monthly delivery. These reports were first structured and computed in Microsoft Excel, where figures were organised, cross-checked, and validated, before being formatted in Microsoft Word for reporting. Their preparation required both technical accounting knowledge and attention to detail, as any inconsistency would directly affect the reliability of the information reported to the client.

The preparation of the *Informação Empresarial Simplificada* (IES) was also among the responsibilities undertaken throughout the internship period. The IES is a mandatory annual declaration that consolidates a company's financial, accounting, and fiscal information for a

given fiscal year. It is submitted electronically through the *Portal das Finanças*, the online platform managed by the AT, by the 15th day of the seventh month following the close of the reference fiscal year. The IES is structured into several annexes, each covering a specific area of the company's activity. The annexes addressed throughout the internship included Annex A, which contains the full set of financial statements for companies subject to corporate income tax (CIT), including the income statement, balance sheet, and cash flow statement; Annex L, which covers VAT operations and transactions; Annex H, which discloses transactions with related parties and income obtained in foreign territory; and Annex R, which contains complementary fiscal information. Given the amount of information required and the complexity of the underlying calculations, such as the VAT previously computed in Excel, the accurate completion of the IES is heavily reliant on the quality and consistency of the accounting records maintained throughout the year and the accuracy of the supporting calculations.

All deliverables were managed by the team's seniors and manager through Sightline, PwC's global engagement management platform, which structures the workflow of each project, enabling the planning, execution, and quality review of all tasks prior to client delivery, in accordance with the firm's internal standards.

To support the sustained growth of its workforce, PwC Portugal offers training programmes to ensure and empower each employee with the necessary skills to optimise their performance and deliver greater value to each project and client, fostering autonomy and a continuous learning culture within the firm. This learning element was strongly present throughout the internship period. During the first week, mandatory training sessions were completed on several topics including ethical standards, data protection and confidentiality, and internal compliance policies. Subsequently, participation in the MS digital academy, an intensive 48-hour training programme dedicated to Artificial Intelligence (AI) and its practical implications for the finance and accounting profession, provided a comprehensive understanding of key concepts, including Generative AI (GenAI) and Agentic AI, and how to apply AI tools, such as ChatPwC and Copilot, on daily professional tasks. Throughout the internship, these tools were regularly used to clarify technical accounting doubts, with access to specialised AI agents, including an agent dedicated to Portuguese accounting standards, providing reliable guidance within a secure internal environment.

3. Literature Review

In this chapter, a theoretical framework is presented covering the main concepts related to the topic, as well as relevant literature on Digital Transformation and the field of accounting. The first section explores the concept of Digital Transformation, its role in today's business world, the technologies driving it, as well as their benefits, challenges, and best implementation practices. Then, a thorough review of studies on the use of these tools in the accounting profession is presented, along with their impact on financial and tax reporting. The last section explores the current Portuguese context, along with the main limitations of existing research on the subject.

3.1. Digital Transformation in the Business World

In a fast-paced business world, there is an unprecedented need for information that is accessible 24/7, transparent, and trustworthy. Digital Transformation (DT) can be defined as a technology-driven process that strategically reshapes the organisation's business model and culture in order to create value (Al-Moaid & Almarhdi, 2024). As an ongoing process, DT aims to build a digital culture by combining technology adoption with organisational practices (Ivančić et al., 2019). It goes beyond mere process automation and optimisation, deeply disrupting a company's social and institutional setting to achieve competitive differentiation (Durão et al., 2019; Gonçalves et al., 2022). Thus, DT is a sociotechnical concept that requires an alignment of organisational operations and practices, transcending mere technology adoption (Shahzad et al., 2025).

Literature also presents DT as a multidimensional concept. Ivančić et al. (2019) identified seven dimensions of DT: strategy, people, organisation, customer, ecosystem, technology, and innovation. The authors underline the importance of considering all dimensions to guarantee that organisations keep pace with transformation. Similarly, Verhoef et al. (2021) argue that DT is driven by digital technologies, digital competition, and digital customer behaviour.

To better understand the process of DT, it is important to analyse its evolution. Verhoef et al. (2021) and Reis and Melão (2023) distinguish between three phases: digitisation, digitalisation, and DT. Digitisation consists of transforming analogue data into digital formats that computers can store and process. Digitalisation refers to the use of digital

technologies to optimise business processes, involving a larger amount of data and information than the previous step. Finally, DT is the most extensive phase, as it transforms the business at its core, involving business models and value creation. Therefore, DT goes beyond mere process digitalisation.

Al-Moaid and Almarhdi (2024) further define this process as a growth strategy that has attracted increasing investment in recent years. The authors report that, in 2022 alone, DT received substantial investment, reaching a staggering 2 trillion USD. According to the World Economic Forum (WEF, 2025), broadening digital access is the most transformative macrotrend, with 60% of employers stating that it is the most likely to reshape their business by 2030. In this context, firms must keep up with digital developments, as those that lag behind risk becoming obsolete in the face of more innovative and risk-taking competitors (Verhoef et al., 2021). As a result, businesses are under pressure to reinvent themselves in order to sustain a competitive position in the market (Gonçalves et al., 2022).

3.1.1 Key Technologies Driving Digital Transformation

An important driver of DT is Artificial Intelligence (AI), a subset of computer science that aims to build systems capable of replicating human abilities such as learning, reasoning, problem-solving, and decision-making (Alruwaili & Mgammal, 2025). It combines statistics, logic, and semantics to simulate cognitive abilities including data analysis, pattern recognition, and prediction (Kokina et al., 2025). Additionally, it can analyse large volumes of data, commonly referred to as Big Data, to identify patterns and generate predictions about future outcomes (Zhang et al., 2020). Li (2026) further notes that AI is goal-oriented, as it uses the knowledge learned from data analysis to achieve specific targets. Drawing upon Reis and Melão (2023), AI is currently one of the most disruptive technologies, acting as an innovation catalyst across sectors.

Kokina et al. (2025) categorise AI technologies based on their complexity and accessibility, distinguishing between "Simple AI" and "Complex AI". "Simple AI" includes tools that are highly accessible and easy to use, such as Machine Learning (ML), Robotic Process Automation (RPA), and Optical Character Recognition (OCR). In contrast, "Complex AI" comprises more sophisticated technologies that require greater technical knowledge to be efficiently implemented, such as deep learning and Generative AI (GenAI).

Machine Learning (ML) is a core component of AI and plays a pivotal role in shaping DT (Odonkor et al., 2024). It consists of self-learning systems capable of analysing data, identifying patterns, and making predictions (Zhang et al., 2020). Due to their adapting nature, ML systems gain efficiency as they process more information (Odonkor et al., 2024). Within ML is Generative AI (GenAI), a tool that goes beyond mere pattern recognition by using natural language processing to generate new content from unstructured information, including text and images (Guglyuvatyy, 2025). GenAI produces autonomous content through prompting, instead of traditional algorithm programming (Abou Ali et al., 2026). It uses deep learning models to predict the next component of a sequence, such as the next word in a sentence or the next pixel in an image (Kokina et al., 2025). Examples of GenAI include OpenAI's ChatGPT and Anthropic's Claude, which can generate coherent text, summarise information, and maintain interactive dialogue (Jones & Free, 2026). From GenAI stems Agentic AI. According to Abou Ali et al. (2026), while Gen AI is a content generator that responds to specific inputs, Agentic AI pursues goals, prioritises them, and monitors its own progress. In contrast to GenAI, Agentic AI acts autonomously by planning, maintaining memory of context, interacting with external tools, and adapting based on feedback from the environment or human supervisors. The authors further describe an AI agent as an independent worker designed to fully complete a task, rather than merely responding to isolated prompts.

Robotic Process Automation (RPA) is another transformative technology driving DT. It consists of a rule-based automation tool that uses software bots capable of replicating human actions (Zhang et al., 2020), such as downloading files and sending emails (Gonçalves et al., 2022). Unlike AI technologies, which focus on analysis and prediction, RPA is designed for repetitive rule-based actions (Zhang et al., 2020).

Another tool that has long been transforming businesses is Optical Character Recognition (OCR). This technology is designed to extract text from PDF documents and scanned images so that computers can analyse, store, and process (Malladhi, 2023). OCR enables computers to analyse and recognise printed or handwritten characters and convert analogue data into digital data without changing the core output (Gonçalves et al., 2022; Pargmann et al., 2023).

Enterprise Resource Planning (ERP) systems are another key element of DT, consisting of unified platforms that integrate business functions, from human resources to finance, into a

single network that provides real-time access to data (Sokunbi, 2025). Systems such as SAP, Oracle, and the aforementioned Microsoft Dynamics NAV, fill the information gap between departments deeply enhancing transparency.

Finally, Cloud Computing has significantly increased business connectivity. Sokunbi (2025) defines it as a technology that allows multiple users to access their data and applications remotely at any time. Thus, it serves as a catalyst for AI technologies, as it provides extensive computing capacity for processing of large datasets (Abou Ali et al., 2026; Li, 2026).

3.1.2 Benefits of Technology Adoption

In the corporate context, DT is pursued to create value and sustain competitive advantage in the market (Durão et al., 2019; Verhoef et al., 2021). Accordingly, Cardoso et al. (2024) studied the impact of technology adoption on the competitiveness of 291 Portuguese organisations and found that productivity, technology adoption, commitment to technology adoption, and knowledge management were the main contributing factors, explaining 81.3% of the variability in organisational competitiveness. This competitive advantage is reflected in financial performance, as the successful implementation of DT strategies can increase profitability and contribute to higher asset returns (Ivančić et al., 2019).

Existing literature underlines increased productivity and efficiency as the main benefits of DT. Reis and Melão (2023) conducted a meta-review of studies on the impacts of DT on organisations and found that the main long-term benefit of DT is operational efficiency. Similarly, Cardoso et al. (2025) investigated how DT impacts organisational performance in the post-pandemic context by surveying 320 leaders from Portuguese companies across several industries, and identified innovation as one of the factors contributing to more than 52% of performance variance. Other authors argue that technology adoption improves organisational efficiency by enabling more efficient resource allocation, as well as better time and workforce management (Cardoso et al., 2024; Pargmann et al., 2023). In addition, McKinsey survey findings indicate that, over time, the productivity gains from the implementation of AI tools in the business context could reach a staggering $4.4 trillion (Mayer et al., 2025).

Another widely mentioned benefit is cost efficiency (Pargmann et al., 2023). Durão et al. (2019) studied the state of digital adoption of Portuguese organisations, gathering the

responses of 77 top management professionals across several sectors. Approximately 30% of respondents stated that cost reduction was the most important goal of strategic DT, making it the second most selected option. Accordingly, Verhoef et al. (2021) argue that one of the two objectives existing companies must achieve to remain competitive is reducing costs through automation. Moreover, Reis and Melão (2023) highlight cost reduction as the second major long-term benefit of DT. Beyond operational costs, DT helps reduce the costs associated with reshaping business models (Al-Moaid & Almarhdi, 2024).

Furthermore, an important benefit of technology adoption is improved customer experience. According to Durão et al. (2019), the most frequently cited goal of DT strategy among Portuguese professionals was to improve customer engagement. In line with this, Ivančić et al. (2019) argue that digital technologies are used to reshape business operations according to customers' needs, thereby improving customer experience. Verhoef et al. (2021) further state that DT aims to create more value for customers by combining emerging technologies with existing business knowledge.

Additionally, DT increases organisational resilience by improving firms' ability to adapt to complex environments and withstand crisis and external shocks (Ivančić et al., 2019). In line with this, Shahzad et al. (2025) argue that DT helps organisations become more agile. Al-Moaid and Almarhdi (2024) found that successful DT is positively correlated with the strength of a company's dynamic capabilities, including the ability to detect opportunities and changes, act on them, and adapt. This agility enables organisations to effectively manage critical situations and ensure long-term sustainability (Cardoso et al., 2025).

Some authors also argue that employees' satisfaction and motivation are among the benefits of DT (Pargmann et al., 2023). Resende (2024) claims that technology adoption can improve employee motivation by reducing repetitive tasks and allowing employees to focus on more strategic tasks. Accordingly, Januszewski and Pietrysiak (2025) state that technology adoption enables professionals to concentrate on tasks that add more value to the business. However, this perspective contrasts with concerns about the replacement of humans by machines, which will be discussed in the following section.

Consistent with the existing body of literature, McKinsey survey findings indicate that AI adoption positively impacts innovation, employee satisfaction, customer satisfaction, and competitive differentiation (Singla et al., 2025).

3.1.3 Challenges of Technology Adoption

Despite the long-term benefits of technology, the real challenge often lies in the short-term results (Mayer et al., 2025). According to the WEF (2025), the most significant obstacles to DT are skill gaps in the labour market, followed by organisational culture, and resistance to change. Data from Eurostat (2025) similarly show that the main barriers to AI adoption among EU enterprises are lack of skills (70.89%), uncertainty regarding regulation (52.52%), and data privacy and security concerns (48.83%), while ethical concerns and high implementation costs are perceived as less significant by firms.

In fact, resistance to change is one of the most frequently cited challenges in existing research. According to Durão et al. (2019), approximately 43% of respondents identified organisational culture as the major barrier to DT, while between 20% and 30% of organisations reported resistance from management or lack of leadership vision**.** The adoption of emerging technologies requires a deep restructuring of mindsets, habits, and organisational culture (Cyfert et al., 2025), which is likely to trigger resistance among employees due to fear of job displacement (Reis & Melão, 2023; Ślaź, 2025). Resistance may also stem from the preference for traditional methods, leading to conservative behaviour regarding DT (Januszewski & Pietrysiak, 2025). This human inertia is often the main barrier in large companies, where the cost of innovation is not a major issue (Gonçalves et al., 2022). As a result, resistance to change may lead to negative short-term effects on organisational efficiency (Cyfert et al., 2025).

Existing literature further highlights skill gaps as another significant obstacle to DT. Durão et al. (2019) found that roughly a quarter of organisations identified the lack of employee digital skills as the main barrier to DT. Reis and Melão (2023) argue that emerging technologies are surpassing employees' performance, thereby demanding a higher level of competencies. Addressing this challenge requires organisations to develop their workforce digital literacy while continuously adapting to the pace of technology evolution. In this regard, Alruwaili and Mgammal (2025) warn that the overreliance on digital tools, particularly AI-based technologies, may foster employee disengagement, a phenomenon commonly referred to as "automation fatigue", in which employees feel overburdened and unable to adapt (Ivančić et al., 2019; Reis & Melão, 2023). Adding to this challenge, Sokunbi (2025) highlights that the technical complexity of digital tools can hinder their integration with existing systems, while Pargmann et al. (2023) emphasise that maintaining legacy systems

along with new solutions may create inefficiencies. Accordingly, organisations must invest in upskilling their workforce and modernising their technological infrastructure to manage DT effectively.

Beyond skill gaps, DT raises additional concerns regarding job displacement (Januszewski & Pietrysiak, 2025; Ślaź, 2025). Singla et al. (2025) report that a median of three out of ten respondents expects a decline in their workforce across business functions in 2026. As digital tools increasingly outperform humans, organisations may redesign cost structures to prioritise investment in technological development at the expense of staff retention (Verhoef et al., 2021). Pargmann et al. (2023) further argue that firms may reduce or reorganise their workforce to meet operational demands, as routine tasks become automated. Accordingly, Jones and Free (2026) warn that employees who fail to integrate digital competencies into their skill set risk being overlooked or ultimately replaced.

In addition to these human-centred challenges, high implementation costs remain a critical challenge to technology adoption. Odonkor et al. (2024) state that technology adoption and the subsequent need for training and development are not cost-free, making implementation challenging for firms with limited resources. Thus, the inability to cover the initial investment and other associated costs may hinder the DT process (Cardoso et al., 2024). Accordingly, Durão et al. (2019) found that approximately 40% of organisations identified insufficient budgets as the primary obstacle to technology adoption, a limitation that is particularly severe for small and medium-sized enterprises with limited financial resources (Gonçalves et al., 2022).

Furthermore, concerns regarding cybersecurity and data protection remain significant in existing studies (Pargmann et al., 2023). Li (2026) argues that digital technologies may pose a threat to data privacy and security. Odonkor et al. (2024) highlight risks such as data leaks and cyberattacks, which can be enabled by the centralisation of data on external servers (Sokunbi, 2025). Overall, these risks threaten the organisations' long-term sustainability (Gonçalves et al., 2022), making cybersecurity an increasingly important consideration in strategic planning (Cyfert et al., 2025).

Another major challenge widely mentioned in the literature is the lack of regulation around DT. Guglyuvatyy (2025) notes that digital technologies are evolving at an unprecedented pace, yet legal safeguards and control mechanisms continue to lag behind. Odonkor et al.

(2024) reinforce that AI adoption raises legal challenges related to data privacy, intellectual property, and ethical standards. This regulatory gap further creates uncertainty regarding accountability for unpredictable and unintended behaviour of AI tools (Abou Ali et al., 2026), which can lead to ethical conflicts and biased outcomes (Alruwaili & Mgammal, 2025; Li, 2026). In this context, several authors stress the need for ethical and regulatory frameworks to support the development of digital tools, as well as their integration and monitoring (Odonkor et al., 2024; Kokina et al., 2025). However, some studies also caution that excessive regulation may further hinder DT, by creating bureaucratic inefficiencies (Shahzad et al., 2025). In this regard, the authors emphasise the need to reduce bureaucracy to provide the agility and innovation capacity necessary for a successful DT.

Overall, although long-term advantages of DT across the business world lie in productivity gains, it is essential to balance the challenges to successfully create value.

3.1.4 Best Practices for Technology Implementation

DT goes beyond mere technology adoption, presenting an intricate challenge that requires both innovation and strategic vision, as it disrupts business models, operations, and human behaviour within the organisation (Durão et al., 2019). Al-Moaid and Almarhdi (2024) argue that successful DT is developed around five pillars: technology, process, people, culture, and business model. Accordingly, organisations must develop a clear strategy early on, aligning their vision, objectives, and opportunities.

Drawing upon Cyfert et al. (2025), DT should be grounded in cultivating digital leadership, digital skills, and a digital organisational culture. The process should therefore begin with strong leadership and a clearly defined vision, prioritising effective progress over the pursuit of an unattainable perfect solution. Shahzad et al. (2025) reinforce the idea that openness to change must begin at the top management level. Accordingly, Taiwo and Downe (2013) note that people's motivation to accept change may stem from influential others, hence the importance of leadership's alignment with DT. Thus, leaders must address existing gaps and foster a culture of collaboration, risk-taking, and innovation that embraces the adoption of emerging technologies (Reis & Melão, 2023).

In terms of implementation, Jones and Free (2026) suggest organisations should begin by establishing a clear DT vision, followed by an assessment of existing data management

practices and digital skills. Firms should then define key performance indicators (KPIs) to monitor the value generated by DT over time, and establish a governance board to ensure data accuracy and privacy. Al-Moaid and Almarhdi (2024) further recommend breaking down milestones into short-term attainable objectives, referred to as "quick wins". Accordingly, Ślaź (2025) argues that DT should be implemented in phases, beginning with less critical business areas in order to mitigate risks and build confidence among employees.

Regarding organisational structure, Shahzad et al. (2025) argue that change must occur in three critical dimensions: reducing internal bureaucracy, flattening hierarchical layers, and broadening the use of collaborative tools. By adopting an ecosystem approach, organisations are able to promote both internal collaboration between business units and external collaboration with partners and suppliers, supporting more agile problem-solving and decision-making. The authors further explain that companies typically choose between two restructuring models: separating the digital structure from core operations, or integrating small digital teams within existing business units. Verhoef et al. (2021) similarly support the transition towards Holacracy, a decentralised management system that distributes decision-making across self-managing teams, enabling greater flexibility and experimentation.

Concerning workforce engagement, Ślaź (2025) argues that employees must be involved in every step of the DT process, with transparent communication and investment in developing digital skills. The author suggests the creation of digital training programmes in which the first trained professionals serve as mentors, supporting colleagues in adapting to digital change. Ivančić et al. (2019) further emphasise the importance of involving both employees and customers when evaluating proposed digital solutions, as they are best positioned to assess their practical relevance. According to the Unified Theory of Acceptance and Use of Technology, employees may become disengaged with the adoption of emerging tools if they perceive them as too complex (Taiwo & Downe, 2013), thereby reinforcing the need for digital literacy initiatives and upskilling programmes (Januszewski & Pietrysiak, 2025).

Existing literature also highlights several structured frameworks to guide organisations in transitioning towards a digital environment. Mayer et al. (2025) recommend the McKinsey's *Rewired* framework, which contains six components including business-oriented digital roadmap, workforce upskilling, agile practices, modern infrastructure, improved data management practices, and the scaling of digital initiatives. Alternatively, Al-Moaid and

Almarhdi (2024) suggest Kotter's eight-step model for change management, given that it guides organisations in establishing a sense of urgency, building a guiding coalition, developing and communicating a strategic vision, empowering action, generating short-term wins, and sustaining long-term change. Alruwaili and Mgammal (2025) further propose the CACS (Commitment, Accessibility, Capability, Skill Development) framework to guide the responsible integration of technology. It is grounded in leadership's commitment, the ethical accessibility to technology, organisational capacity to execute change, and the continuous development of workforce skills.

One of the most prominent DT strategies in existing literature is Human-in-the-Loop, an oversight mechanism that integrates human feedback into AI decision-making, reducing error margins and ensuring control over autonomous systems (Abou Ali et al., 2026). McKinsey survey findings report that 65% of the organisations that generate the greatest returns from AI have well-defined processes to determine how and when AI outputs require human validation (Singla et al., 2025). Thus, it is important to maintain human oversight throughout automation processes, ensuring precision, compliance with legal standards, and the responsible use of technology (Guglyuvatyy, 2025). Nevertheless, this approach demands that employees develop analytical skills to effectively review and assess systems' outputs.

Existing studies underscore the need for control mechanisms and regulatory standards that ensure fairness, transparency, and accountability in technology adoption (Guglyuvatyy, 2025). However, governance frameworks must balance oversight with the flexibility needed to sustain innovation, as overly restrictive controls may prove counterproductive (Kokina et al., 2025). Alruwaili and Mgammal (2025) and Abou Ali et al. (2026) further reinforce that there is no general solution, and that governance mechanisms should be strategically adapted to the organisational context.

Despite these structured approaches, most organisations remain in the experimenting and piloting phases, with only 31% having started to scale deployment (Singla et al., 2025). While "Simple AI" tools such as OCR are widely implemented across organisations, "Complex AI" tools such as GenAI remain experimental, due to concerns related to data privacy and transparency. Nevertheless, 92% of companies plan to expand their investments in AI applications over the next three years (Mayer et al., 2025), reflecting growing ambition.

However, this investment must go beyond technology, covering the cultural and organisational elements necessary for successful DT.

3.2. The Role of DT on Accounting Practices

Since 2018, there has been exponential growth in publications on DT, particularly in the accounting field (Sampaio & Silva, 2025). According to Eurostat (2025), the third most prominent purpose of AI use among EU enterprises in 2025 is rooted in accounting, controlling or finance management. Gonçalves et al. (2022) further state that the adoption of emerging technologies has completely revolutionised the accounting practice.

The process of DT in accounting goes beyond mere dematerialization. It is defined by the integration of automated software and AI into accounting processes to optimise redundant tasks, thereby reducing time and increasing efficiency (Sampaio & Silva, 2025). For instance, RPA uses digital bots to perform rule-based tasks, such as bank reconciliations, continuously and without interruption. Moreover, ML algorithms improve accounting estimates reducing error rates (Li, 2026), and are able to identify anomalies useful for fraud detection, thereby enhancing information accuracy and transparency (Darmawati et al., 2025; Alruwaili & Mgammal, 2025). Additionally, AI adoption could further facilitate the correct implementation of intricate accounting standards, including GAAP-FAS133, a US accounting standard that requires companies to measure all derivative instruments at fair value, and the IFRS 9, an international accounting standard that regulates financial instruments (Ślaź, 2025; Li, 2026). ERP systems complement these technologies by combining business processes in a single platform, enabling immediate access to financial data (Sokunbi, 2025). These platforms automate key accounting processes, such as invoicing and bank reconciliation, playing a crucial role in managing daily operations, standardising processes, and helping firms maintain internal control (Sampaio & Silva, 2025), thereby promoting long-term financial stability (Sokunbi, 2025). Moreover, cloud computing increases information accessibility without the need to invest in complex IT infrastructure, enabling the scalability of accounting solutions (Odonkor et al., 2024).

The complementarity of emerging technologies also presents an important source of value. For instance, the combined use of RPA and ML improves decision-making and predictive capabilities (Kokina et al., 2025), while advanced OCR tools integrated with AI automatically extract data from invoices and digitalised documents, reducing human error and accelerating

the accounts payable process (Malladhi, 2023). Furthermore, ERP platforms are now cloud-based strategic tools that integrate AI to improve business insights and operational efficiency (Sokunbi, 2025).

As technology automates repetitive tasks, accountants are able to perform higher value-added activities (Januszewski & Pietrysiak, 2025), shifting towards advisory, risk management, and strategic decision-making roles (Alruwaili & Mgammal, 2025). This digital evolution of accounting has expressed itself in the emergence of new professions, including forensic accountants and AI compliance specialists (Alruwaili & Mgammal, 2025). Empirical evidence supports this transition. For instance, Januszewski and Pietrysiak (2025) surveyed 60 employees of Polish accounting firms to assess their perceptions of DT impacts and found that 88% of respondents believed their profession would be affected by DT, while only 42% believed their role would remain largely unchanged. In addition, Resende (2024) studied the impact of DT within a Portuguese accounting firm serving SMEs and found a 54.45% productivity increase in document processing due to time efficiency.

However, DT in accounting does not come without challenges. Cybersecurity and data privacy remain major concerns, as the centralisation of large volumes of data in cloud-based platforms facilitates cyberattacks and data theft (Zhang et al., 2020; Januszewski & Pietrysiak, 2025). Another challenge is the lack of explainability of AI outputs, which inhibits accountants from understanding how results are generated, potentially leading to misjudgements (Kokina et al., 2025). Skill gaps and fear of job displacement are also major concerns, particularly in junior positions which usually perform routine tasks (Pargmann et al., 2023; Odonkor et al., 2024). Nearly 70% of respondents in Januszewski and Pietrysiak's (2025) study indicated that digital technologies require professionals to improve their digital competences, as they are now required to possess both core accounting knowledge and digital proficiency (Zhang et al., 2020). This need for reskilling is also evident in a survey conducted by Alruwaili and Mgammal (2025) where 38% of 101 accountants in Saudi Arabia reported the need for digital training programmes to mitigate skill gaps. These concerns are echoed by the WEF (2025), which identifies Accounting, Bookkeeping and Payroll Clerks, and Accountants and Auditors among the top 15 fastest-declining jobs between 2025 and 2030.

Overall, the literature suggests that DT will not eliminate the accounting profession, but rather transform it. Jones and Free (2026) introduce the concept of "Hybrid Intelligence Accounting", an approach in which human expertise is combined with ML systems to improve data collection, professional judgment, and decision-making. In this model, technology is primarily used to process large volumes of data and detect complex patterns, while accountants retain responsibility for interpretation, validation, and ethical oversight. The future of the profession will therefore depend on firms' ability to adapt and gain competitive advantage through DT (Sampaio & Silva, 2025).

3.3. The Impacts of DT on Financial and Tax Reporting

Over the past decade, the integration of AI tools has significantly modernised financial and tax reporting, transitioning from manual to automated digital processes. According to Karam and Ammoury (2025), ML is capable of analysing large volumes of data to predict tax liabilities and improve tax planning and strategy, while Gen AI is able to analyse intricate tax regulations and ensure legal compliance. The authors surveyed 109 Italian management and finance professionals and students examining their perceptions regarding the impacts of AI in tax compliance and planning. They identified time efficiency in tax preparation, filing, and reporting as the main positive impact, followed by improved simplicity, better compliance with changing regulations, increased accuracy, and more effective identification of tax-saving opportunities. Nonetheless, the authors also note that AI is already capable of replacing human expertise in well-defined, evidence-based tasks that require pattern recognition.

Ślaź (2025) further highlights one of the major strengths of AI adoption as the automation of financial reporting. Gen AI is increasingly used to write financial statement disclosures and create quality report drafts under human supervision (Kokina et al., 2025). Zhang et al. (2020) further document how RPA and OCR are being used in Big Four firms for automatic data recognition and report generation, including tax returns and anti-bribery and anti-corruption reports. By automating these repetitive tasks, professionals are able to focus on higher value-added activities (Januszewski & Pietrysiak, 2025). For instance, by automating compliance reports, PwC reduced reporting time by 25%, generating cost savings of over 1 million USD per year (Zhang et al., 2020).

Empirical evidence supports these benefits. Li (2026) analysed the impact of AI on financial reporting quality among Chinese listed firms from 2010 to 2023. The author distinguishes

between the "governance effect", which consists of efficiency gains through enhanced information processing and reduced expenses, and the "noise effect", which is based on the aggravation of information inaccuracy. The findings indicate that the governance effect is predominant, as AI adoption improves disclosure quality, clarity, and precision in mandatory sections of annual reports. Darmawati et al. (2025), in a systematic literature review of the impact of digital tools on financial reporting in the public sector across several countries, similarly found that technologies such as ML and RPA improve predictive reporting, fraud detection, reporting automation, and information reliability. Sampaio and Silva (2025) further argue that opportunities outweigh the threats, as accounting software is being designed to generate intelligent reports, enabling accountants to deliver greater value to their clients.

Nonetheless, the literature also highlights important challenges. The "noise effect" explained by Li (2026) raises concerns about AI tools generating false or contextually irrelevant information, commonly referred to as "hallucinations", which can compromise the reliability of reporting. Recent scandals involving Big Four firms over the misuse of AI in financial reporting have underscored these risks. For instance, cases where AI-generated outputs were not properly validated have led to inaccurate disclosures involving AI "hallucinations" in published client reports, leading to legal consequences and damaging firms' reputation. Thus, there is an urgent need for oversight of uncertain AI outputs before their inclusion in reporting processes (Kokina et al., 2025). Guglyuvatyy (2025) further highlights the opacity and lack of explainability of AI systems in tax reporting, which hinders users' understanding of automated outputs and compromises their ability to contest potentially faulty decisions.

Overall, the literature reinforces that, despite the potential of technology to increase financial and tax reporting efficiency and quality, human oversight and ethical norms remain essential to navigate possible vulnerabilities (Odonkor et al., 2024).

3.4. The Portuguese Context

In recent years, Portugal has been making steady progress in DT. As evidenced in Figure 1, 11.54% of Portuguese enterprises used AI technologies in 2025, a slight increase from 8.63% in 2024 (Eurostat, 2025), reflecting a gradual improvement in the country's digital readiness, despite remaining below the EU average.

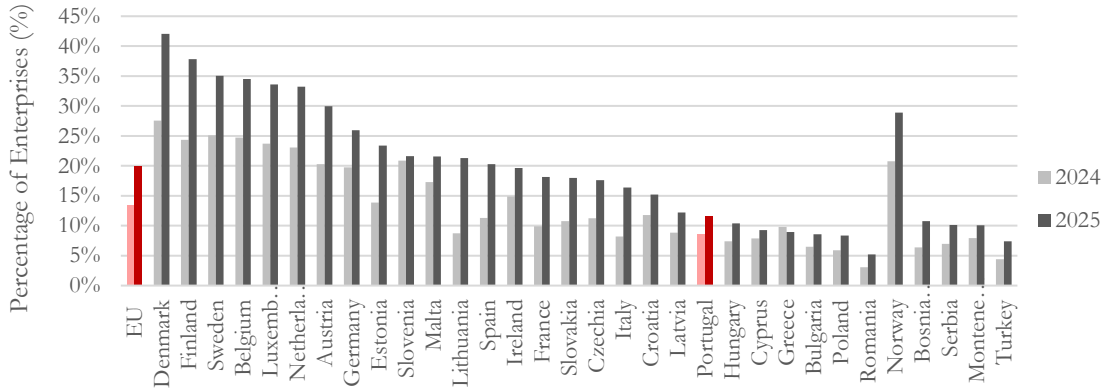


Figure 1 - *Enterprises using AI technologies (2024 and 2025)*

Note. Adapted from Eurostat (2025).

In this context, the Portuguese National Artificial Intelligence Agenda (ANIA) aims to boost AI adoption to increase the country's productivity and GDP by 2030 (Government of Portugal, 2026). Cardoso et al. (2024) studied the impacts of digital technologies on the competitiveness of 291 Portuguese organisations and found that technology adoption is among the main factors contributing to organisational competitiveness. However, the authors note that most firms exhibit low digital maturity. Durão et al. (2019) similarly found that 61% of Portuguese top management professionals view technological disruption as an opportunity for business improvement, while only 6.5% see it as a threat. The authors found that the three main goals driving digital adoption are customer centricity, process and cost efficiency, and increased business visibility and revenue. Furthermore, they identified leadership vision and organisational culture as the main facilitators of DT, while resistance to change, lack of employee skills, and inadequate budgets were among the main barriers.

Currently, Portuguese accounting firms remain in an initial phase of DT, despite technology already redefining business models (Gonçalves et al., 2022). They use technologies such as OCR and the e-Invoice to optimise accounting and tax processes and prevent tax evasion (Resende, 2024). Nevertheless, the low pace of adoption stems from several challenges,

particularly skill gaps. According to the WEF (2025), by 2030, 71% of the Portuguese workforce will require upskilling, surpassing the global average of 58%. ANIA further estimates that 1.3 million positions will be requalified and 320,000 workers relocated by the same year (Government of Portugal, 2026). Moreover, 44% of current skills of Portuguese employees are projected to be transformed within the same period (WEF, 2025).

The ethical implications of DT are also a major concern within the Portuguese business context. According to ANIA, 54% of business leaders are concerned about legal and reputational consequences, identifying this as the major barrier to DT (Government of Portugal, 2026). Rymarczyk (2022, as cited in Cardoso et al., 2024) further argues that the lack of international regulation and concerns regarding the protection of intellectual property represent a major global threat to DT. Presently, accountants can rely on guidelines to navigate DT. For instance, the Portuguese Order of Certified Accountants endorses an informational guide issued by the European Federation of Accountants and Auditors (EFAA), which advises on transparency of AI use, the selection of AI tools based on security features, and the definition of clear accountability mechanisms and contingency plans (EFAA, 2024).

At the European level, the EU AI Act (European Union, 2024) establishes a risk-based regulatory framework, distinguishing between unacceptable-risk, high-risk, limited-risk, and minimal-risk AI systems (Ebers, 2025). AI systems classified as posing unacceptable risks are prohibited, including certain manipulative practices (European Parliamentary Research Service [EPRS], 2024). For high-risk AI systems, the regulation imposes mandatory requirements, including risk management, transparency, and human oversight (EPRS, 2024). For AI systems classified as limited-risk, the AI Act introduces targeted transparency obligations, such as informing users that they are interacting with AI, whereas minimal-risk systems are not subject to further specific obligations under the Act (EPRS, 2024; Teichmann, 2026). In addition, Article 95 of the EU AI Act encourages voluntary codes of conduct for AI systems other than high-risk systems, allowing providers and deployers to voluntarily apply some requirements associated with high-risk systems (EPRS, 2024). While the AI Act provides a comprehensive and binding framework, Ebers (2025) cautions that its implementation must remain genuinely risk-based in order to avoid over-regulation and preserve regulatory proportionality.

Overall, despite the exponential growth of publications on this topic, three main research gaps were identified. First, most studies focus on high-ranking professionals, neglecting lower-level positions. Additionally, Portugal remains largely underrepresented, as existing studies focus on countries such as China (Li, 2026), Poland (Januszewski & Pietrysiak, 2025), and the United States (Kokina et al., 2025), and those that do address the Portuguese context are either general, with no specific sector, or focused solely on SMEs. Lastly, there is a lack of depth in existing literature regarding the best practices for DT in accounting and tax fields, as well as a holistic perspective that integrates opportunities, challenges, and strategic practices (Karam & Ammoury, 2025). This study aims to address these gaps by adopting an integrated approach focused on a large Portuguese enterprise, incorporating a broader sample of survey respondents from various hierarchical positions to enable result scalability.

4. Methodology

4.1. Methodological Approach

For the purpose of exploring how DT is transforming accounting, financial, and tax reporting in a leading Portuguese firm, this study adopts a mixed-methods approach, combining a quantitative survey with qualitative semi-structured interviews. It follows an explanatory sequential design, in which interviews are conducted after the survey to further explore and contextualise its results (Creswell & Inoue, 2025).

This integrated approach was chosen to address the distinct research questions. To begin with, RQ1 and RQ2 concern outcomes that can be measured and compared, such as efficiency gains and reporting quality, making them more suitable for quantitative analysis. In contrast, RQ3 and RQ4 focus on professionals' perceptions of the impact of technology adoption and their expectations for the future of the profession, which are better explored through a qualitative approach. The two methods are therefore complementary as the survey identifies patterns across the sample, while the interviews help interpret them, strengthening the study's overall conclusions.

4.2. Data Collection

Consistent with the explanatory sequential design previously outlined, data collection involved two consecutive phases. First, a structured questionnaire was developed using Microsoft Forms, allowing its distribution through PwC's internal systems. The survey comprises six sections. The first two contextual sections address demographic information, including job position and years of experience, and the respondents' familiarity with, and frequency of use of, five key technologies: AI, RPA, OCR, Cloud Computing, and ERP systems. Each contextual section is measured on a separate 5-point scale (1 = "Not familiar at all"/"Never" to 5 = "Extremely familiar"/"Always"). These sections provide the descriptive basis for characterising the sample and its technology exposure, further analysed in Chapter 5.1.

The remaining items were built around 14 constructs organised into four sections corresponding to the four dimensions of the DT impacts identified in previous literature. Table 1 presents the constructs, along with their dimensions and definitions.

Table 1 - *Constructs for measuring the DT impact*

Dimension	Construct	Code	Definition
Operational Efficiency	Process efficiency	PE	The extent to which technology reduces time and increases productivity in accounting tasks.
	Reporting timeliness	RT	The ability to deliver reports on time.
	Process simplification	PS	The reduction of process complexity.
Quality & Compliance	Reporting quality	RQ	The impact of technology on the accuracy, consistency, and reliability of financial reports.
	Tax compliance & regulation adaptability	TCRA	The ability to fulfil tax obligations on time and adapt to regulatory changes.
	Tax reporting risk	TRR	The reduction of human errors in tax reporting.
	Tax strategy	TS	The ability to identify tax-saving opportunities and optimise tax planning.
Challenges & Concerns	Tool complexity	TCOMP	The perceived difficulty in learning and using digital tools in the workplace.
	Digital literacy	DL	The self-perceived level of digital skills and readiness to work with available technologies.
	Data security & privacy	DSP	The level of concern regarding data security and privacy risks associated with digital tools.
	Trust in digital tools	TDT	The degree of trust in the accuracy and reliability of outputs generated by digital technologies.
Future Outlook	Skill disruption	SD	The extent to which DT is changing the skills required for the accounting profession.
	Leadership vision & support	LVS	The perceived organisational commitment to adopting emerging technologies.
	Evolution of the professional role	EPR	The perception that DT is reshaping the role of accounting professionals.

The questionnaire structure, including the constructs, was adapted from the survey design used by Karam and Ammoury (2025) in their study on the impact of AI on tax compliance and planning, chosen due to the proximity of its topic and objectives to the present study's focus. Each construct was measured through three to four statements, totalling 43 items, on a 5-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree", suitable for subsequent statistical analysis, namely reliability testing, descriptive statistics, and group comparisons (Koo & Yang, 2025). The questionnaire was disseminated via the company's institutional email to the target population and remained open for approximately one month, during which 111 responses were collected prior to data screening, a process further described in the next chapter. The survey's structure, including the constructs and corresponding statements, is presented in Table 10 (Appendix 1).

The second phase consisted of six semi-structured interviews with professionals from several hierarchical positions within the Finance & Accounting and Tax Compliance Managed Services team at PwC Portugal. The interview guide was developed following established guidelines (Kallio et al., 2016): gathering prior theoretical knowledge, creating and testing a preliminary version, and critically reviewing it before its use. Thus, a preliminary interview guide was developed based on the theoretical background and patterns already identified in the survey results, and the first interview served as a pilot test, allowing for minor adjustments before the guide was applied to the remaining interviews. While a common set of topics was maintained across all interviews, namely the perceived benefits and challenges of digital tools, and expectations regarding the future of the profession, each conversation was tailored to the interviewee's role. Each interview began with a brief introduction presenting the study's objectives, confirming voluntary participation, and obtaining recording authorisation.

All interviews were conducted in Portuguese for a more natural conversation. Five were conducted online via Microsoft Teams, according to participants' preferences and location, and one took place in person at the PwC office. Interviews were recorded and transcribed for analysis, lasting approximately one hour each and totalling 46 pages of transcribed material, the primary data source for the thematic analysis presented in Chapter 5.5.

In both phases, participants were informed that participation was voluntary, and their responses would be anonymous and used exclusively for academic purposes.

4.3. Sample

The target population for the quantitative survey consisted of professionals working within the Finance & Accounting and Tax Compliance MS team at PwC Portugal, across the Porto, Lisbon, and Coimbra offices, totalling 335 professionals. As aforementioned, the questionnaire resulted in 111 responses prior to screening, corresponding to a response rate of approximately 31.3%. Prior to analysis, the dataset was screened in order to eliminate invalid responses and ensure data quality, using two criteria. Firstly, the duration of responses was analysed, and respondents completing the questionnaire in less than 50% of the median completion time (2 minutes and 54 seconds, against a median of 5 minutes and 48 seconds) were excluded, as such durations are not compatible with committed participation in a 43-item survey. Secondly, responses displaying straight-lining, meaning identical response values across all Likert items, were also excluded as they suggest lack of attention and engagement. This screening process led to the exclusion of 11 responses due to insufficient completion time and 2 responses due to straight-lining, resulting in a final valid sample of 98 respondents.

Regarding the qualitative phase, six professionals from the MS team occupying distinct positions were selected, ensuring diversity across hierarchical levels and allowing the interviews to capture the perceived impacts of DT from multiple perspectives, ranging from operational to decision-making levels. To ensure both anonymity and consistency in referencing, interviewees are referred to by code, from E1 to E6, following the chronological order in which the interviews were conducted. Table 2 presents the profile of the six participants and the contribution each brings to the study.

Table 2 - *Profile of interview participants*

Interviewee	Job position	Team	Years in the firm	Contribution to the study
E1	Associate	MS	1	This interviewee holds the most junior position in the sample and has the shortest tenure in the firm. This profile mixes accounting with technology, as they personally create automation tools for internal use, providing insights into DT not only from the user's perspective, but also from the creator's perspective.
E2	Consultant	MS	4	This interviewee occupies an early-to-mid career position with a traditional accounting background, representing the operational perspective of an accountant who applies AI tools directly to routine tax and accounting tasks.
E3	Senior associate	MS	8	This interviewee occupies a mid-level position combining accounting responsibilities with an informal internal AI-training role, offering a perspective that combines the oversight of team outputs with the diffusion of digital skills across colleagues.
E4	Senior associate	DT team, MS	6	As a member of the Digital Transformation team, a subset of the MS team, this technical profile contrasts from a traditional accounting or tax profile. This interviewee provides a singular perspective of the development, governance, and implementation of digital solutions, as well as on the training required to support their adoption.
E5	Director	MS	10	This profile combines earlier hands-on experience developing automation solutions with a current leadership position. It is particularly relevant for capturing how prior technical experience shapes a leader's vision and attitudes towards DT.
E6	Partner	MS	17	The most senior interviewee and the longest-tenured within the firm, having witnessed the department's entire digital evolution. Their role is now predominantly commercial and strategic, providing unique insights into the firm's technology investment decisions, workforce planning, and governance. This profile offers a top-down perspective, complementing the more operational viewpoints.

4.4. Data Analysis

The data collected from the quantitative instrument was analysed using IBM SPSS Statistics. Prior to computing the composite scores of each construct, two items, namely DSP3 ("I am confident in the security mechanisms implemented in the digital tools I use") and TDT2 ("I feel the need to manually verify the outputs produced by automated tools"), were reverse scored to minimise acquiescence bias, a standard practice for balanced Likert-scale instruments (Koo & Yang, 2025).

The analysis of the quantitative data was conducted in three steps. First, a reliability analysis was carried out to assess the internal consistency of the questionnaire, by calculating the Cronbach's alpha (Cronbach, 1951) for each of the four dimensions, which was interpreted according to Nunnally and Bernstein's (1994) threshold, with values above 0.70 being considered acceptable. An item-level analysis was then conducted to identify problematic items. Then, a descriptive analysis was carried out in which the mean and standard deviation were calculated for each construct based on their composite scores. The mean was adopted to identify the highest perceived impacts, thereby addressing RQ1, while the standard deviation was used to assess the consensus or dispersion across the sample. Finally, in order to respond to RQ2, group comparisons were also conducted to assess whether the perceived impacts differ by job position and years of experience. This was analysed through one-way ANOVA for each construct across both group variables. Where the ANOVA was significant, Levene's test was used to verify the homogeneity of variances prior to post-hoc analysis. As variances were homogeneous in both cases, Tukey's HSD post-hoc test was conducted to identify which groups differed significantly, along with effect sizes to measure the magnitude of these differences, which were interpreted according to Cohen's (1988) benchmarks (small = 0.01, medium = 0.06, large = 0.14). Finally, group means were calculated for the constructs that presented significant differences in Tukey's HSD post-hoc test, to further interpret which groups showed higher or lower agreement.

Qualitative data collected from the six semi-structured interviews was analysed using thematic analysis following Braun and Clarke's (2006) six-step approach. The first step included the transcription of the interviews, followed by a thorough reading of the transcribed materials to obtain a deep familiarisation with the content. The second step involved the initial coding of emerging themes and patterns across the interviews. This process was conducted manually using Excel, and was both deductive and inductive. The

deductive component emerged from the 14 constructs used in the survey, ensuring a conceptual alignment between the quantitative and qualitative phases, typical of an explanatory sequential design. During coding, six additional inductive codes emerged throughout the interviews and were only formalised once they appeared in at least two interviews. These codes are further described in Chapter 5.5. The third step included grouping the codes in order to identify themes, while the fourth step involved reviewing and refining them. The fifth step consisted in clearly defining and labelling themes to better understand their contribution to which challenges emerge with DT (RQ3) and how DT is impacting the interviewees' professional role (RQ4). The last step included producing the output, which contains illustrative quotes from interviewees and the connections between the findings and the literature, which is presented in Chapter 5.5.

5. Findings

In this chapter, the findings from the 43-item survey and six semi-structured interviews are presented in five sections. The first section characterises the sample by demographic factors and technology familiarity and usage. The following two sections report survey reliability and descriptive statistics for the main constructs and dimensions. The fourth section presents group comparisons by job position and years of experience, while the final section presents the thematic analysis of the interviews.

5.1. Sample Characterisation

As described in Chapter 4.3, the final valid sample contains 98 respondents. Regarding job position, Associates represent the largest group accounting for 49.0% of the sample, followed by Intern/Trainee (21.4%), Senior Associate (15.3%), Senior Manager (6.1%), Director/Partner (5.1%), and Manager (3.1%). Regarding years of experience, the largest group has 1-3 years (33.7%), followed by less than 1 year (23.5%), 4-6 years (19.4%), more than 10 years (15.3%), and 7-10 years (8.2%). Overall, the sample is concentrated in professionals in the early and middle stages of their careers, consistent with the pyramidal structure characteristic of a Big Four firm.

Regarding the sample's technology familiarity, AI is the technology respondents are most familiar with, as 49.0% report being "Very familiar" and 16.3% "Extremely familiar", while none report being "Not familiar at all". ERP systems follow, with 39.8% and 25.5% reporting levels 4 and 5, respectively. In contrast, RPA has the lowest reported familiarity, with 32.7% of respondents indicating "Not familiar at all", the highest proportion of lowest-scale responses across all five technologies. Finally, OCR and Cloud Computing show familiarity more evenly distributed across the scale.

The frequency of use follows a similar pattern, with AI being the most frequently used technology, as 51.0% and 28.6% of respondents report using it "Often" and "Always", respectively. ERP systems follow closely, with 24.5% and 41.8% reporting levels 4 and 5, respectively. Cloud Computing also shows relatively high usage, with 22.4% and 30.6% reporting using it "Often" and "Always", respectively, while OCR occupies an intermediate position. RPA once again shows the lowest usage frequency, with 38.8% of respondents reporting "Never" using it.

5.2. Reliability Analysis

As aforementioned, the survey's internal consistency was analysed by calculating Cronbach's alpha for each of its four dimensions. As evidenced in Table 3, all four dimensions reached at least an acceptable level of reliability (Nunnally & Bernstein, 1994). Item-level analysis revealed that the two reverse-scored items, DSP3 and TDT2, contributed to the respective constructs' lower reliability, suggesting misinterpretation of the reverse wording rather than genuine disagreement with the underlying constructs, a known risk associated with such items (Koo & Yang, 2025). These items were thus removed, improving the Challenges & Concerns dimension's alpha from 0.612 to 0.727, and were therefore excluded from subsequent composite score calculations and statistical analysis.

Table 3 - *Cronbach's alpha (N = 98)*

Dimension	Items	Cronbach's alpha	Interpretation
Operational Efficiency	9	0.911	Excellent
Quality & Compliance	13	0.944	Excellent
Challenges & Concerns	10	0.727	Acceptable
Future Outlook	9	0.863	Good

5.3. Descriptive Analysis

As previously described, composite scores were calculated for each of the 14 constructs based on their respective statements, as well as for the four dimensions, to support the descriptive analysis and subsequent group comparisons. To address RQ1, mean and standard deviation (SD) were calculated for each dimension and construct to identify the main perceived impacts of DT. Table 4 presents the mean and SD for each dimension, computed from their respective composite scores, in descending order of agreement based on the 41 statements retained after removing the reverse-scored items (DSP3 and TDT2), as discussed in the previous chapter.

Table 4 - *Descriptive statistics of the DT impact dimensions (N = 98)*

Dimension	Mean	SD
Future Outlook	4.14	0.50
Operational Efficiency	4.11	0.61
Quality & Compliance	3.84	0.61
Challenges & Concerns	3.45	0.47

Regarding the impact dimensions, Future Outlook registered the highest mean score (4.14), followed by Operational Efficiency (4.11) and Quality & Compliance (3.84). In contrast, Challenges & Concerns obtained the lowest mean score of 3.45. Moreover, the low standard deviations across all four dimensions (SD ≤ 0.61) indicate a relatively high level of consensus among the 98 respondents.

Table 5 presents the mean and SD for each of the 14 constructs, computed from their respective composite scores.

Table 5 - *Descriptive statistics of the study constructs (N = 98)*

Construct	Mean	SD
PE	4.19	0.66
SD	4.17	0.55
EPR	4.16	0.60
RT	4.12	0.66
LVS	4.10	0.60
PS	4.03	0.66
RQ	3.90	0.68
TRR	3.90	0.65
DL	3.85	0.63
TCRA	3.82	0.63
TS	3.74	0.67
TDT	3.56	0.65
DSP	3.46	0.76
TCOMP	2.96	0.76

At the construct level, respondents showed highest agreement with statements related to Process efficiency (4.19), followed by Skill disruption (4.17), and Evolution of the professional role (4.16). Conversely, lowest agreement was reported for statements related to Tool complexity (2.96), Data security & privacy (3.46), and Trust in digital tools (3.56). Regarding the standard deviations, the two constructs with the lowest mean scores (TCOMP and DSP) presented the highest standard deviations of the survey (SD = 0.76 in both cases), indicating a greater dispersion of opinions regarding these concerns in comparison with the lower dispersion observed for the highest-scoring constructs.

5.4. Group Comparisons

To address RQ2, one-way ANOVA was conducted for each of the 14 constructs across two grouping variables: job position and years of experience. Regarding job position, the ANOVA revealed statistically significant differences for two constructs: Evolution of the professional role (EPR) and Skill disruption (SD), both obtaining a $p < 0.05$ and representing large effect sizes ($\eta^2 = 0.187$ and $\eta^2 = 0.184$, respectively), as evidenced in Table 6. Regarding the remaining 12 constructs, no significant differences were found across job position, as all recorded a $p > 0.05$.

Table 6 - *One-way ANOVA results by job position*

Construct	F(5, 92)	p	η^2
EPR	4.230	0.002	0.187
SD	4.140	0.002	0.184

A post-hoc analysis was then conducted for the constructs that obtained significant differences across job position. As Levene's test indicated homogeneity of variances for both EPR and SD ($p = 0.167$ and $p = 0.116$, respectively), Tukey's HSD post-hoc test was conducted. For EPR, the test revealed that the group Director/Partner registered significantly higher scores than both the Associate group ($p = 0.013$) and the Intern/Trainee group ($p = 0.009$). Table 7 presents the mean values by job position, which increase consistently across hierarchical levels.

Table 7 - *Mean EPR values by job position*

Job position	Mean	N	SD
Director/Partner	4.93	5	0.15
Manager	4.78	3	0.39
Senior Associate	4.42	15	0.62
Senior Manager	4.17	6	0.62
Associate	4.05	48	0.60
Intern/Trainee	3.97	21	0.45

For SD, although the one-way ANOVA showed significant differences across job positions, Tukey's HSD post-hoc test did not identify statistically significant differences between any specific pair of groups, indicating that the global effect does not concentrate strongly enough

in any single group comparison. However, a pattern of increasing mean values by seniority was observed, similar to EPR, as shown in Table 8.

Table 8 - *Mean SD values by job position*

Job position	Mean	N	SD
Manager	4.90	3	0.19
Director/Partner	4.73	5	0.28
Senior Manager	4.39	6	0.71
Senior Associate	4.38	15	0.62
Associate	4.04	48	0.51
Intern/Trainee	4.00	21	0.45

Finally, regarding years of experience, no statistically significant differences were found for any of the 14 constructs, as all p-values exceeded 0.05. However, Tool complexity approached statistical significance, $F(4, 93) = 2.398$, $p = 0.056$, $\eta^2 = 0.094$.

5.5. Thematic Analysis

Following Braun and Clarke's (2006) six-step framework, the six semi-structured interviews were analysed combining both deductive codes, derived from the 14 original constructs, and inductive codes resulting from interview patterns. During coding, all 14 deductive codes were confirmed across all interviews, with Process efficiency (PE), Digital literacy (DL), Evolution of the professional role (EPR), and Leadership vision & support (LVS) each appearing in all six interviews. Six inductive codes, presented in Table 9, appeared at least twice throughout the interviews and were therefore formalised.

Table 9 - *Inductive codes*

Code	Definition
TIME	Lack of time dedicated to the adoption of digital solutions.
GOV	Internal governance and risk-approval processes as an adoption barrier.
TCAP	Tool capacity and usage constraints driven by cost limitations.
RISK	Cultural/organisational risk aversion as a challenge to DT.
PEER	Peer-to-peer demonstration as a driver for the adoption of emerging tools.
CLIENT	Client readiness for digital outputs, rather than professional readiness.

In total, five themes emerged from the grouping of both deductive and inductive codes, each presented in the following subsections. Table 11 (Appendix 2) further summarises the themes, including their codes, dimensions, and valences.

5.5.1 Measurable Operational Gains

This theme groups the constructs belonging to the dimension Operational Efficiency (PE, PS, and RT). It is particularly noteworthy due to the precision with which interviewees quantify efficiency gains, frequently providing supporting figures.

For instance, E1 describes the impact of an automation tool they developed for client data validation: *"[…] people previously did manually and would spend a month verifying a client's information […] I developed a tool that allowed all of that validation to be done automatically. The fastest I managed was 25 seconds.*" This efficiency gain allowed the team to expand its client base without a proportional increase in allocated resources: *"[…] we had 1,000 to 1,200 clients, and that occupied 100% of the resources allocated to the project. Now we have 4,000 clients and […] resource utilisation is around 80%".* Similarly, E2 explains how VAT generators replaced extensive manual work, as the generated files are *"[…] ready to submit to the Tax Authority*", and how IES annexes supporting file now *"[…] almost fills itself"* once VAT data is entered. Moreover, E3 describes an AI agent they created to streamline the monthly closing process: "*It works in three phases: someone posts the entries, another person reviews them, and then there is the balance sheet review […] I recently built a tool that does this pre-validation."* E3 further states that the process *"[…] is now 80% automated*", reducing the time required from eight hours to two. As part of the internal DT team, E4 reports similar gains resulting from a new tool the team developed with Power Automate for internal audit compliance to archive client communications, which *"[…] significantly reduces the time spent on the process and also supports risk and compliance requirements."*

At more senior levels, E5 recalls earlier experiences developing an ERP importer that *"[…] automated around 90% […]"* of financial statement preparation, as well as an automated invoicing workflow that *"[…] significantly reduc[ed] manual work."* Furthermore, E6 reports using GenAI to *"[…] analyse documents and contracts, draft emails, and summarise information"* as it accelerates the process. They also identify OCR and GenAI as the most impactful tools on the team's work, as they *"[…] make a huge difference in terms of efficiency and productivity"* and in the *"[…] preparation and summarisation of information",* respectively.

5.5.2 Quality Gains with Clear Interpretative Limits

This theme groups the constructs belonging to the dimension Quality & Compliance (RQ, TCRA, TRR, and TS). Its relevance lies in the recurring distinction between

objective/mathematical and subjective/interpretative tasks. In addition, it is the only theme containing clear examples of technology failure.

E1 reports the limitations of AI in interpreting the law, stating that there are *"[…] certain nuances that AI cannot capture. There are grey areas, and AI is binary: it is one or zero, there is no in-between."* Similarly, E2 emphasises that technology performs well in objective tasks, however *"[…] when it is interpretative, we are in the realm of subjectivity, and even we humans disagree."* To address these nuances, E3 applies the 80/20 rule where *"[…] AI does 80% of the work. […]"*, while the remaining 20%, the part dependent on context and judgement, requires human validation. Accordingly, E2 reinforces that *"AI should do the execution part, and we should give the final check."*

In addition, E3 illustrates the risks of relying entirely on technology with a specific example: a financial forecast in which AI miscalculated office costs for a company operating remotely, because it relied on generic assumptions rather than the client's real context, stating that *"[…] without adequate context, AI can fail and distort the final result."* E3 further describes another case where AI attributed €100 to the wrong invoices, an error detected through manual review, reinforcing that AI may *"[…] arrive at the right number by adding the wrong data, purely by coincidence."* At the highest seniority level, E6 provides additional examples of technology implementation failure, including a tool for the preparation of *Modelo 22* that *"[…] ultimately did not succeed."* and an automation for financial statement preparation that *"[…] still contains many errors."*

In contrast, interviewees also report quality gains from technology adoption. For tasks that are largely mathematical, namely accounting and tax compliance tasks, E3 describes AI as *"[…] a second pair of eyes."* E2 further notes that automation can free up time that can be shifted to a more thorough validation, which *"[…] will increase the quality of the work."* From a top-down perspective, E5 observes that automation improves tax compliance by enabling the team to generate greater value for the client, by delivering more strategic and analytical reports *"[…] instead of just sending a periodic declaration, at the end of each month […]"*.

5.5.3 Time and Trust as the Primary Individual Barriers

This theme groups the constructs belonging to Challenges & Concerns dimension (DL, DSP, TCOMP, and TDT), as well as inductive codes TIME and CLIENT. It contains one of the key overarching qualitative findings present across nearly every interview: the primary barrier

to greater adoption of digital solutions most participants indicate is not a lack of interest or readiness, but a lack of available time.

At an operational level, E2 identifies lack of time as their biggest limitation to technology adoption: *"[…] in day-to-day work, we do not have room to develop, as projects are the priority and take up all the time."* They suggest that, for those who are interested in technology, working hours should be split between work and digital development, *"[…] for example, 70% on projects and 30% dedicated to development."* Similarly, E3 indicates *"[…] resistance to change, lack of practice, and lack of time"* as the main barriers, noting that "*the tool itself does not require much training, half an hour is enough to understand the basics."* They further state that Chat PwC has been available to the team for approximately a year and a half, yet remained underexplored by most colleagues, due to a lack of time to practice. Both E6 and E4 identify the same issue, with E6 arguing that *"[…] the central issue is lack of time, or at least the perception of lacking time, rather than complacency"*, while E4 states that *"deadline pressure, team turnover, and lack of resources mean that people simply do not have the availability to explore new ways of working."*

Regarding trust in digital tools, E2 compares growing confidence in AI to the way trust is built with a person: *"Trust is built over time, exactly as with people. I validate it the first time, the second, the third, and if it consistently produces good results […] I begin to trust it more."* Nonetheless, E2 affirms they would not deliver AI outputs directly to clients without human validation. From a leadership perspective, E6 warns that *"[…] there is a risk of taking their answers for granted and drawing incorrect conclusions"*, stressing the importance of critical thinking. This theme extends to the client's own trust in AI outputs, or the lack of it. In fact, E1 argues that Portuguese businesses are not prepared to receive AI outputs, explaining that most are *"[…] micro, small, and medium-sized enterprises, many of them family-owned and led by older generations who had little or no contact with technology […]"*. Similarly, E2 notes that *"the client will probably not trust a chat to make an important decision; they will prefer to go to the accountant."*

5.5.4 Evolution of the Professional Role: An Uneven Transition

This theme groups the constructs belonging to the Future Outlook dimension (EPR, SD, and LVS), as well as inductive code PEER. Perspectives differ according to hierarchical position, appearing more optimistic among senior levels and more contested among intermediate levels.

For instance, E1, an Associate, describes the expected shift *"[…] towards using our heads and less our fingers"*, predicting that *"[…] most repetitive and tedious tasks will no longer need to be done by humans."* Nevertheless, they acknowledge that human judgment will remain essential, as AI lacks the creativity necessary to perform in *"grey areas"*, such as tax optimisation. Similarly, E2 expects a transition of the role from *"executive accountants"* to *"data analysts and consultants"*. E3 provides a more drastic prediction, suggesting that the trainee position *"as it exists today"* may no longer exist, as new entrants *"[…] will not execute; they will be accompanied and trained to make decisions based on available information."*

At higher hierarchical levels, this evolution is viewed more confidently. E5 predicts that *"mechanical tasks"* will cease to exist as the focus will be delivering clients *"[…] management reports, management control, and KPIs to support business measurement and future strategy."* E6, a Partner, similarly expects the hierarchical pyramid to flatten, with *"[…] more people focused on validation, control, review, critical thinking, and human input […]"* rather than execution. However, E6 raises an unresolved question: *"If that stage does not exist, how do you ensure that people develop the critical thinking and know-how to identify that something is not right or missing?"*, a concern about how future professionals will develop the analytical skills required to validate digital outputs for tasks they have never fully performed.

Perspectives of leadership's role in this evolution appeared inconsistent across interviews. E3 criticises the current approach, stating that *"[…] everyone says they are aligned […] But when it comes to implementation, execution is difficult"* due to excessive bureaucracy. Conversely, from a leader's viewpoint, E5 argues that often *"it is necessary to demonstrate repeatedly that the change adds value and reduces the time required to prepare information"* for a broader adoption from the team. Accordingly, E6 explains that change creates resistance, and sometimes *"[…] leadership has to take a clear position and establish a deadline to ensure that changes move forward"*. E5 also highlights peer-to-peer dissemination as an effective alternative to leadership motivation, as adoption is widespread *"[…] when two or three teams start showing efficiency gains from new processes."* They further state that this method is already common practice in the team: *"We encourage this through monthly meetings between seniors and managers, where colleagues share the prompts they have developed."*

5.5.5 Organisational and Structural Barriers

This theme is entirely inductive, grouping the codes GOV, TCAP, and RISK, and represents a key qualitative contribution of the study by identifying licensing costs, governance constraints, and risk aversion as barriers to technology adoption.

From a developer's perspective, E4 provides a clear example of governance as a significant barrier: *"The Outlook automation example took around one month to develop and another two and a half months before going live because it had to go through several risk and governance processes."* The Senior Associate highlights the extensive *"governance framework"* associated with emerging tools, noting that their implementation *"[…] raises many questions regarding access management, security, and data control."* From the perspective of a decision-maker, E6 corroborates this, stating that *"[…] one of the main criteria we consider is the risk inherent in adopting a new technology, as well as strict compliance with all information security and risk management requirements."*

In addition, limitations in tool capacity and usage due to cost were identified as barriers by interviewees. E2 explains that a monthly usage limit on Chat PwC was introduced, which *"[…] for those who want to develop and test prompts, it quickly becomes restrictive."* E3 illustrates this point, referring to the use of Claude Opus: "*In a single execution, I used 86% of my monthly capacity in three hours."* E4 explains that *"tools like Copilot have very expensive licenses"* which prevent universal access within the organisation. E6 further identifies incompatibilities between tools provided by the global network and the Portuguese context, stating that leadership has *"[…] tried several times to suggest adjustments to the platform to meet Portuguese requirements and specificities, but those proposals were rejected"*, due to the tools' costs outweighing their potential benefits. E3 further explains that *"[…] Portugal does not have the financial structure to support the cost"* of implementing tools that are already available in other PwC firms across the network.

Finally, risk aversion emerged as a cultural and organisational barrier. E3 argues that *"the Portuguese manager is probably one of the most risk-averse in the entire EU. […] We only present when it is 100% secure, with zero margin of error"*, explicitly contrasting this approach with the *"fail fast, fail cheap"* startup practice, also mentioned by E1. E6 further describes the Portuguese business culture as highly risk-averse, *"especially in the more family-owned businesses here in the North."*

6. Discussion

This chapter critically analyses the study's findings in light of the existing literature to evaluate the impact of DT on accounting and tax practices within a large Portuguese professional services firm. It addresses the four supporting RQs regarding the main perceived impacts of DT, differences by job position and years of experience, adoption challenges professionals face, and expectations for the future of the profession. Overall, it identifies common patterns and differences between quantitative and qualitative findings and examines their alignment with the theoretical background outlined in Chapter 3.

Regarding RQ1, descriptive analysis of the 14 constructs showed that professionals' main perceived impacts of DT are Process efficiency, Skill disruption, and Evolution of the professional role, while Tool complexity, Data security & privacy, and Trust in digital tools were perceived as less impactful. This pattern transpires to the dimensional level, as Future Outlook, Operational Efficiency, and Quality & Compliance outscored the Challenges & Concerns dimension. This means that DT is generally perceived within the team as a source of substantive benefits and professional evolution rather than deep concern. This is consistent with previous literature identifying operational efficiency as a major long-term benefit of DT (Reis & Melão, 2023), as well as McKinsey's report estimates of substantial productivity gains from long-term AI use across sectors (Mayer et al., 2025). Qualitative findings further reinforce process efficiency as a major impact of DT through the theme "Measurable operational gains", with professionals across hierarchical levels providing specific examples. For instance, E1 reported reducing a client validation process from one month to 25 seconds, while E3 described automating 80% of the monthly closing process with AI, reducing the time required from eight hours to two, and E5 recalled an ERP importer that automated 90% of financial statement preparation. The density of precise examples exceeds previous evidence, such as Resende's (2024) finding of 54.45% productivity increase in document processing within a Portuguese accounting firm. This shows that efficiency gains are not merely perceived, but actively measured and embedded by professionals in their daily work.

Furthermore, the low agreement with challenges such as Tool complexity, Data security & privacy, and Trust in digital tools indicates that respondents do not perceive tool reliability and complexity as major obstacles of digital adoption within the team. This does not imply

that concerns regarding inaccurate outputs are absent, but rather that they are not considered substantial barriers. This nuance is reinforced by the qualitative theme "Quality gains with clear interpretative limits", which shows that digital tools are effective for objective and routine tasks but less reliable for interpretative tasks requiring professional judgment. This reflects Li's (2026) contrast between the "governance effect" of AI, involving improved efficiency and information processing, and its "noise effect", involving inaccurate outputs and hallucinations. This is illustrated by E1, who referred to *"grey areas"* where AI is unable to perform effectively, while E3 described an instance in which AI attributed €100 to the incorrect origin, both clear examples of the "noise effect". As a senior interviewee, E6 also identified cases of unsuccessful technology adoption, such as the *Modelo 22* preparation tool and the financial statement automation. These cases show that limitations are not confined to operational levels and that successful implementation depends partly on the nature of the task, particularly whether it is objective and rule-based or interpretative and context-specific. This reinforces the importance of the Human-in-the-Loop strategy, widely mentioned across interviews and prior studies (Abou Ali et al., 2026; Guglyuvatyy, 2025), as a permanent review and validation practice. This was also evident during the internship itself, as although NAV automated accounting processes, namely monthly closings, the process of collecting, verifying, and validating the required documents remained manual and highly dependent on professional judgement.

Regarding RQ2, findings show that the constructs Evolution of the professional role (EPR) and Skill disruption (SD) significantly differ by job position, with large effect sizes (η^2 = 0.187 and η^2 = 0.184, respectively), with consistently higher agreement among the group Director/Partner than groups Associate and Intern/Trainee. This indicates that perceptions of DT, particularly regarding the future of professional role and required skills, vary according to hierarchical position. This is in line with literature's view that openness to change begins at the top of the hierarchy (Shahzad et al., 2025), and may explain the greater confidence among senior professionals compared with more operational roles, which may face greater concerns about job displacement (Reis & Melão, 2023).

The qualitative theme "Evolution of the professional role: An uneven transition" further highlights this pattern. Although interviewees across positions anticipate the disappearance of routine tasks and a shift towards advisory functions, senior professionals such as E5 view this as an opportunity to deliver greater value to clients. In contrast, E3 provides a more

drastic view, questioning the future of the trainee position *"as it exists today"*. E6 provides a more balanced perspective, by sharing E5's optimism but raising concerns about how future professionals will develop the critical thinking required to validate digital outputs if they no longer undergo the execution phase. The Partner further predicts a flatter hierarchical pyramid as entry-level positions upgrade to the review level, consistent with prior studies indicating flatter hierarchies as key to successful DT (Shahzad et al., 2025). Moreover, the absence of statistically significant differences by years of experience across all 14 constructs suggests that job position is a stronger predictor of DT perceptions than tenure. This contrasts with Januszewski and Pietrysiak (2025), who found that experienced professionals, who are more accustomed to traditional processes, may perceive DT more negatively. This contrast may stem from the nature of the MS team, where technology exposure appears relatively balanced across levels of experience.

Regarding RQ3, Challenges & Concerns was the lowest scoring dimension, but qualitative results reveal that concerns remain concentrated around specific individual and structural barriers, particularly lack of time, client's lack of trust in digital outputs, governance restrictions, cost limitations, and risk aversion, differing from the original constructs the survey was designed to capture, such as Tool complexity, Digital literacy, Data security & privacy, and Trust in digital tools.

Gonçalves et al. (2022) argue that in large firms, where the cost of innovation is not a major challenge, human inertia may hinder digital adoption. The present study provides a more nuanced perspective. Rather than resistance to change emerging as the primary barrier, the qualitative theme "Time and trust as the primary individual barriers" identifies lack of available time as the most consistent obstacle across interviews. E2 explained that there is a lack of time for digital development, as *"[…] projects are the priority and take up all the time"*, while E4 highlighted project deadline pressure as a significant constraint. At the highest seniority level, E6 similarly identified *"[…] lack of time, or at least the perception of lacking time, rather than complacency"* as the central issue. These findings suggest that slow adoption largely stems from practical constraints rather than human behaviour. However, resistance to change is not entirely absent, with E3 identifying it as an adoption barrier and attributing it to a lack of time and practice, consistent with prior studies associating resistance with the preference for traditional methods (Cyfert et al., 2025; Januszewski & Pietrysiak, 2025). E6 and E5 further highlight the importance of leadership endorsement, establishing adoption

deadlines, and repeatedly demonstrating that *"change adds value"* to encourage wider adoption within the team. These findings remain in line with literature emphasising the importance of top-down motivation in addressing resistance (Taiwo & Downe, 2013).

The inductive theme "Organisational and structural barriers" further highlights governance restrictions, licensing costs, and risk aversion. This is in line with Shahzad et al. (2025), who argue that successful technology implementation within an organisation requires reducing internal bureaucracy. E4 illustrated the case of an Outlook automation that required three and a half months to move from development to deployment due to risk and governance processes. In this regard, literature shows that rather than an excessively bureaucratic "one-size-fits-all" governance framework, compliance processes should be adapted to each tool's risk level (Ebers, 2025), reflecting the risk-based logic embedded in the EU AI Act (EPRS, 2024). Moreover, licensing costs are found to be restrictive of emerging tools' availability and capacity. E6 further noted that requests to adapt some tools from the global network to the Portuguese context were rejected because the investment was not considered justified. This contrasts with Gonçalves et al. (2022), showing that cost remains a relevant barrier even within a large professional services firm.

Moreover, risk aversion was consistently associated across interviews with the Portuguese business culture, consistent with previous evidence characterising this environment as comparatively risk-averse (Cardoso et al., 2024; Durão et al., 2019). E3's statement that solutions are only presented when *"100% secure"* contrasts with the *"fail fast, fail cheap"* startup approach, and reflects Cyfert et al.'s (2025) observation that the pursuit of a perfect and unattainable solution may hinder DT, as solutions will inevitably be imperfect. From the clients' side, findings also reveal external resistance with E1 attributing it to the fact that most Portuguese organisations are *"[…] micro, small, and medium-sized enterprises, many of them family-owned and led by older generations who had little or no contact with technology […]"*, consistent with evidence of low digital maturity in the Portuguese business environment (Cardoso et al., 2024).

Regarding RQ4, qualitative findings indicate that DT is transforming accounting and tax practices rather than completely eliminating the profession. Interviewees consistently described a transition of the role from *"executive accountants"* towards *"data analysts and consultants"* (E2), consistent with evidence that DT is substantially reshaping the profession

(Januszewski & Pietrysiak, 2025). E5 similarly anticipated that accountants will provide clients with more valuable information rather than simply submitting periodic declarations, reinforcing the transition towards higher value-added activities**.** This aligns with the "Hybrid Intelligence Accounting" model proposed by Jones and Free (2026), which combines human intelligence with ML systems for improved outputs, giving accountants the responsibility of interpreting and validating them.

However, this evolution raises concerns among interviewees. E3 predicted that the trainee position *"as it exists today"* will cease to exist with the disappearance of execution tasks, while E6 questioned how professionals will develop the required know-how to validate digital outputs without first performing those tasks themselves. Thus, findings show a contrast between the efficiency gains of automating entry-level work and the necessary development of trainees to be able to keep pace with DT. This nuanced perspective contrasts with literature's optimistic view of the shift towards consulting work as a means of professional upskilling (Alruwaili & Mgammal, 2025; Sampaio & Silva, 2025), without addressing how analytical skills will be acquired when the tasks that used to teach them become automated.

Additionally, interviewees also identified strategies to effectively implement emerging tools. For example, peer-to-peer dissemination, mentioned in prior studies (Ślaź, 2025), was identified as an informal strategy implemented through regular team meetings with the purpose of sharing developed prompts, according to E5. This complements the predominantly top-down perspective widely referenced across the literature (Durão et al., 2019; Shahzad et al., 2025), suggesting that a successful adoption may combine leadership motivation with peer demonstration.

Alongside the analysis of the findings, it is important to acknowledge that this study is not without limitations. Although the triangulation between quantitative and qualitative data reinforces the patterns identified, it is important to note that these findings should be interpreted within the context of a single team within a specific Portuguese professional services firm. Thus, the extent to which these results are applicable in other firms, sectors, or countries remains limited, which is further addressed in the following chapter.

7. Conclusion

The present study aimed to provide a comprehensive understanding of how Digital Transformation (DT) is affecting accounting, financial, and tax reporting practices within a large Portuguese professional services firm. To address this central question, four complementary research questions examined the main perceived impacts of DT on this field, whether these perceptions differed by job position and years of experience, the challenges professionals face when adopting emerging technologies, and their expectations regarding the future of their roles and required skills. The research followed an explanatory sequential design, combining the analysis of 98 survey responses and six semi-structured interviews conducted within the Finance & Accounting and Tax Compliance Managed Services team at PwC Portugal.

Directly addressing the research questions, the findings show that professionals perceive DT as having a predominantly positive impact and as a driver of future evolution, rather than a source of major concerns, identifying process efficiency, skill disruption, and the evolution of the professional role as the main impacts. The study also found that perceptions significantly differed by job position, with senior professionals expressing considerably higher optimism than associates and interns/trainees regarding the evolution of the professional role, whereas no significant group differences were found regarding years of experience. Regarding the challenges professionals face when adopting new technologies, qualitative findings identified a lack of available time, rather than employee resistance, as the main obstacle, along with clients' resistance to change, and structural barriers related to governance, costs, and organisational and cultural risk-aversion. Finally, the study found that professionals consistently describe a transition in their roles from execution towards advisory, analysis, and validation, alongside uneven perceptions across hierarchical levels and a genuine concern regarding the preparation of future entrants to analyse and review digital outputs for tasks they will no longer perform due to automation.

The contributions of this study are threefold. First, it provides theoretical contributions through empirical evidence on the impact of DT in the fields of accounting and tax within a large Portuguese firm, directly addressing identified gaps in the literature, particularly the contextual gap, as prior studies have focused on countries such as China, the United States, and Saudi Arabia. Additionally, by including professionals across all hierarchical positions,

from interns to partners, in both the quantitative and qualitative research, this study further addresses the underrepresentation of junior and operational roles in prior research, providing valuable insights across the entire organisational pyramid. Second, it contributes methodologically by integrating quantitative and qualitative data through an explanatory sequential design, in which interview findings were used to interpret patterns identified in survey responses. This further enriched the first-hand insights gained throughout the internship experience. Third, this study provides direct managerial implications. For PwC Portugal and similar firms providing accounting services, the results suggest that, to scale DT, it is important to address structural constraints rather than focus on convincing employees of its value, as their perceptions are already predominantly positive. In practical terms, firms should consider allocating dedicated time beyond billable hours for professionals to explore digital solutions, a measure frequently suggested by interviewees across hierarchical positions. They should also consider streamlining excessively bureaucratic processes, including governance and risk-approval processes, for tools with lower risk without compromising essential security and compliance requirements. The study further suggests strategies for successful digital adoption, such as peer-to-peer demonstration, suggesting that firms may benefit from formalising informal practices, such as knowledge-sharing team meetings, as a complement to leadership endorsement and training initiatives. As limitations of emerging tools remain persistent, particularly their lack of judgment, this study reinforces the importance of the Human-in-the-Loop as an ongoing strategy.

However, this study is not without limitations. Firstly, the quantitative survey obtained a response rate of approximately 31.3%, which, combined with the subsequent exclusion of 13 invalid responses during data screening, further limits the representativeness of the final sample. Additionally, the study is focused on professionals' perceptions, and self-reported data of this nature may lead to response bias, as respondents may answer in a way they perceive as more professionally appropriate rather than genuinely reflecting their experiences. Regarding the qualitative method, although the small number of interviews is methodologically appropriate for an explanatory sequential design, it still limits the range of perceptions captured. Overall, as the survey population and the interviewees are part of the same team and organisation, this may hinder the applicability of the findings to other sectors or countries.

Building on these limitations, future research could replicate this study across different organisational and international contexts. In Portugal, this study could be replicated in other large professional services firms, including other Big Four companies, as well as in smaller accounting or consulting firms with fewer resources, to analyse if the findings vary across different firms and sizes. It could also be interesting to replicate this study across different sectors, or even across different departments and service lines within the same firm, to assess whether the identified patterns are transferable beyond a single organisational context. At an international level, this study could be replicated in other countries, with different regulatory environments, including countries with more mature governance frameworks, to examine whether the organisational and cultural barriers, such as cultural risk aversion and the search for a perfect solution, are specific to the Portuguese business culture or reflect a wider trend within professional services firms. Additionally, future research could address the paradox identified in this study regarding the disappearance of the execution stage, and consequent extinction of the traditional learning path. As automation is expected to reduce trainees' exposure to execution-based tasks, future research could explore how firms will redesign their training processes to ensure new entrants develop the critical thinking and analytical skills required to validate technology outputs, potentially though longitudinal research tracking how training and onboarding practices evolve with DT over time.

Overall, the present study reinforces that, although the accounting profession will not become obsolete due to DT, the role of accounting professionals will be significantly reshaped. As emerging technologies continue to develop at an unprecedented pace, firms and professionals best equipped to embrace and leverage this evolution will be those who view DT as an opportunity for continuous change and growth rather than as a threat. Ultimately, it comes down to who is able to adapt their expertise in response to the demands of this transformation while leveraging technology to continuously create value.

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Appendixes

Appendix 1 – Survey Structure

Table 10 - *Survey Structure*

Dimension	Construct	Code	Statement
Operational Efficiency	Process efficiency	PE1	Digital technologies have reduced the time needed to complete accounting and tax tasks.
		PE2	The use of digital tools allows me to handle more work within the same timeframe.
		PE3	Digital technologies have eliminated repetitive manual tasks that were previously time-consuming.
	Process simplification	PS1	Digital tools have simplified complex accounting processes.
		PS2	The use of technologies, such as RPA and OCR, has reduced the need for manual intervention in routine tasks.
		PS3	Cloud Computing has made it easier to access and share financial information across teams and with clients.
	Reporting timeliness	RT1	Digital technologies contribute to meeting deadlines for the delivery of financial reports.
		RT2	Process automation has reduced delays in tax reporting preparation and submission.
		RT3	Digital tools allow faster responses to client requests for financial information.
Quality & Compliance	Reporting quality	RQ1	Digital technologies have improved data accuracy in financial reports.
		RQ2	Automation has reduced the occurrence of human errors in report preparation.
		RQ3	Digital tools improve the consistency and reliability of the financial information reported.
	Tax compliance & regulatory adaptation	TCRA1	Digital technologies help fulfil tax obligations on time.
		TCRA2	Automation improves compliance with current tax legislation.
		TCRA3	Digital tools enable a faster adaptation to changes in tax and accounting legislation.
		TCRA4	Digital technologies facilitate the implementation of new regulatory standards (e.g., IFRS, local GAAP, tax reforms).
	Tax reporting risk	TRR1	Digital technologies reduce errors in tax returns and procedures.
		TRR2	Automation enables the detection of inconsistencies and anomalies in tax data before submission.
		TRR3	Digital tools reduce the risk of human errors in tax reporting.

	Tax strategy	TS1	AI helps identify tax-saving opportunities for clients.
		TS2	Digital tools allow for a more in-depth scenario analysis to optimise tax planning.
		TS3	Advanced technologies enhance the quality of tax advisory services.
Challenges & Concerns	Digital literacy	DL1	I feel comfortable using the digital tools available in my daily work.
		DL2	I feel adequately prepared to work with the digital tools used in the workplace.
		DL3	I have the digital skills needed to fully use the available technologies.
	Data security & privacy	DSP1	The use of digital tools and Cloud Computing raises concerns about client data security.
		DSP2	Automated processing of financial data increases privacy risks.
		DSP3	I am confident in the security mechanisms implemented in the digital tools I use.
	Tool complexity	TCOMP1	The digital tools used in the workplace are difficult to learn.
		TCOMP2	The complexity of digital technologies slows down their adoption in the workplace.
		TCOMP3	The user interface of current digital tools is not intuitive enough for the average user.
	Trust in digital tools	TDT1	I trust the results generated automatically by digital tools.
		TDT2	I feel the need to manually verify the outputs produced by automated tools.
		TDT3	I believe the digital tools used in my work produce reliable results.
Future Outlook	Evolution of the professional role	EPR1	Digital transformation is shifting the accounting/tax professional's role from task executor to strategic advisor.
		EPR2	I believe that, in the future, analytical and advisory tasks will outweigh operational tasks.
		EPR3	I believe digital technologies will create new career opportunities in the field of accounting and tax.
	Leadership vision & support	LVS1	The organisation's leadership demonstrates a clear vision regarding the adoption of new digital technologies.
		LVS2	Management actively supports the team in adopting new digital tools.
		LVS3	There is an organisational commitment to investing in training and technological development.
	Skill disruption	SD1	Digital transformation is significantly changing the skills required for accounting and tax roles.
		SD2	Some traditional accounting skills are becoming less relevant due to automation.
		SD3	It is necessary to continuously develop new competencies (e.g., data analytics, AI proficiency) to remain relevant in the profession.

Appendix 2 – Summary of Thematic Analysis

Table 11 - *Summary of thematic analysis*

Theme	Codes included	Dimension	No. of interviews	Dominant valence
Measurable operational gains	PE, PS, RT	Operational Efficiency	6/6	Positive
Quality gains with clear interpretative limits	RQ, TCRA, TRR, TS	Quality & Compliance	6/6	Mixed
Time and trust as the primary individual barriers	DL, DSP, TCOMP, TDT, TIME, CLIENT	Challenges & Concerns	6/6	Negative
Evolution of the professional role: An uneven transition	EPR, LVS, SD, PEER	Future Outlook	6/6	Mixed
Organisational and structural barriers	GOV, TCAP, RISK	-	5/6	Negative